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teen No. 855

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A PERFECT SPECIMEN OF ANTIQUE BRONZE.

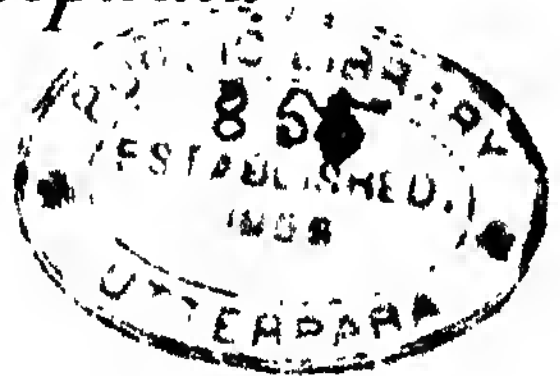


This exquisite figure is thought to have been cast as early as the second half of the fourth century before Christ. It was found at Herculaneum,—that ill-fated Italian city covered with lava streams from Vesuvius' most destructive eruption, A.D. 79. As the lava hardened it formed a matrix eighty feet deep, and although marble and wood suffered, the bronzes, which the biting acids of the earth would corrode, were not injured. To-day, after excavation, the many statues are as perfect as when their sculptors rejoiced in work well done.

The Book of Knowledge

The Children's Encyclopædia

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VOLUMES XXI AND XXII

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This is a short guide only to the principal contents of this volume. It is not possible to give the titles of all the Poems and Rhymes, Legends, Problems, color pages, questions in the Wonder Book, and many other things that come into the volume; but in all cases the pages where these parts of our book begin are given. The full list of these things comes into the big index to the whole work.

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Then she remained with her head bowed in silent prayer, and the king sprang to the door of the dungeon, and cried to the warders:

• "Unbind her! Set her free at once!"

The king then returned to his room, and knelt down by the side of his bed, and clasped his hands, as he had seen the shepherdess do in the dungeon. No words, however, came from his lips, for he had forgotten the prayers which his mother had taught him. But he must have prayed inwardly, for when he lay down he fell asleep, and he woke up the next morning a changed and better man. He no longer thought of war and wealth and power, but considered how he could make his people happy.

"Oh, if only I had my little shepherdess to help me," he exclaimed, "how much good I could do!"

He at once sent his messengers out to find the little girl, but none of them was able to discover where she was. The king was greatly disappointed; but

having learned to pray, he was able to sleep, and he soon recovered the strength and beauty of his youth. Under his mild and skilful rule, his people became happy, and one day a beautiful young lady entered his palace, and said to him, with a winning smile:

"Have you forgotten me? I am the little shepherdess."

"I knew you at once, my darling," said he. "I have been longing for you to come and claim your share of my kingdom. Oh, if only you would be queen and help me to make my people happy!"

"That is just what I should like to do," she replied. "But you will let my mother live in the palace with me, won't you? It was she who taught me how to cure you, by saying to me every night: 'Don't forget to say your prayers, my child, if you wish to sleep in peace and have happy and pleasant dreams.'"

Then the little shepherdess and the great king were married, and there was great rejoicing through the land.

THE LOVE THAT WAS WORTH NOTHING

KING FRANCIS of Germany sat one day in his lion garden, waiting for the animals to come in and fight. All round him were the nobles and ladies of his court.

The king nodded his head. A gateway opened below, and a great tawny lion sprang into the ring. Looking round, and lashing its tail, it laid itself down in the centre.

The king nodded again. A second gateway was opened, and a magnificent tiger appeared, and roared when it saw the lion. After prowling hungrily round the ring for a while it laid itself down, a little way from the lion.

Again the king nodded. Two leopards rushed out and sprang upon the tiger, who knocked them away with one pat of its great paw. For a while the whole air was filled with their roaring. Then it died away as the leopards slunk off to a far corner of the ring, awaiting a better chance of springing upon the tiger.

As the nobles held their breath waiting for the fighting, suddenly a little glove

fell from one of the balconies, right between the lion and the tiger. A noble's beautiful daughter turned to the knight beside her.

"Now, Sir Knight," she said laughingly, "if your love is as strong as you are for ever telling me it is, bring me back my glove."



SUDDENLY A LITTLE GLOVE FELL

The knight looked at her. Then, almost before anyone knew what had happened, he sprang from the balcony, and quick as lightning had the glove in his hands. The animals sprang to their feet, but they were too late.

A cheer went up, and everyone crowded round to praise him and to see him present the lady with her glove. She

could not refuse to give herself to him in marriage, they thought, after he had done such a brave deed for her.

The knight bowed very low.

"If for your pleasure you can expose me to such unnecessary danger," he said,

"I neither value your love nor want it."

And he threw the glove straight in her face, and left her presence for ever.

TWO IMPORTANT CANADIAN UNIVERSITIES



McGill University in Montreal was founded in 1827, by James McGill, a wealthy resident of Montreal. Since that time it has received large gifts, and has added many new departments until now it is one of the best equipped institutions in America. Many of the professors have a world-wide reputation and no university outside the British Islands takes rank above McGill. The picture represents the oldest of all the buildings—the home of the Faculty of Arts, originally a small foundation, but now on a level with the world-famous Schools of Medicine and Engineering.



The University of Toronto was chartered in 1827 as King's College, but was not opened for students until 1827. It received its present name in 1827. It has grown wonderfully since that time, and several other schools and colleges have been made a part of the University, which now has many departments. Its reputation has increased with its growth in numbers. The picture represents only one of many buildings. This building is much admired, and no one who visits the beautiful city of Toronto, "The Queen City of the Lakes," should fail to see it as well as the other colleges and halls.

WHAT THIS STORY TELLS US

THE schools of Canada, both higher and lower, are good, and are growing better. While they differ in excellence in different Provinces and in different districts in the same Province, more and more money is spent upon the free schools, and many great gifts have been made to the colleges and universities. In spite of the small population of Canada, some of her universities have a world-wide reputation. More and more attention is being given to the schools which deal with practical training in agriculture, mining and the like. The future of Canadian education seems bright.

SCHOOLS AND SCHOOLMEN IN CANADA

THE two great nations of North America believe in education, as all free countries must if they are to remain free. In both of them, institutions for both higher and elementary education were established when people were few and poor, and have grown with increasing population and wealth, until now some of the largest and best equipped institutions in the world are in North America.

No country has planned more liberally for public education than Canada. In some of the Provinces one-eighteenth of the public land has been set aside for educational purposes, and as population increases, the land not yet sold will grow more valuable. British Columbia has set apart 2,000,000 acres for her Provincial university. Then, besides, taxes are levied for the support of the schools in the districts.

In Canada, the Provinces have control of education, and each has established a system suited to its own needs, and so what is true of the way schools are managed in your Province, may not be true in another Province, though there is a general likeness except in Quebec. Two things are settled in all of them, however. Education is free in the lower grades, and the children must attend a certain length of time. While the attendance law is not always enforced, in some districts it is hardly needed.

CONTINUED FROM 5302



Ontario has the largest number in school, and spends the largest amount for education, though it does not spend so much on every child as the western Provinces do. In some of the rural districts there are continuation schools, which provide two, or even three, years of high school work for children who live too far away from a high school, or collegiate institute, to attend it. Quebec has more schools and more teachers than any other Province, but does not spend so much money as Ontario. Prince Edward Island, with the smallest population, naturally has the fewest children in school.

Quebec, Ontario, Alberta and Saskatchewan have separate schools for Roman Catholics. The other Provinces have only one system of public schools, as in the United States, and parents who do not wish their children to attend them, must either support private schools or else send their children to schools supported by churches. Some of the church schools receive aid from the government if they meet certain requirements.

THE MEN WHO MANAGE THE PUBLIC SCHOOLS

In every Province, there is at least one officer in direct charge of the public schools, who is usually not changed when the government passes from one party to another. He is called Deputy Minister, Superintendent of Education, Superintendent of Public Instruc-

tion, or some such name, and has of course many assistants, who visit the schools, advise teachers and parents and the like. In Quebec, the man in charge of all the schools has two deputies, called secretaries, one for the Protestant schools, and the other for the Catholic schools. Some Provinces have a Minister of Education, who is a member of the Government, and changes with the change of party. In all the Provinces there is some sort of a board of education to direct, in a general way, those who manage the schools.

HIGH SCHOOLS AND COLLEGIATE INSTITUTES

Beyond the elementary schools are the high schools and collegiate institutes, supported wholly or in part by the public. Ontario has the best system of high schools, but other Provinces are gaining rapidly. In collegiate institutes, pupils sometimes can do some of the work required in college or university. Sometimes the higher schools are not entirely free, but small fees are charged.

Then, too, there are private schools and church schools which prepare for the universities. The different Provinces also support normal schools to prepare men and women for teaching. Some of these are first-class institutions in every respect. Some of the universities also have Departments of Education for the same purpose.

THE COLLEGES—WHAT THE WORD MEANS IN CANADA

In Canada, the word college is not used in quite the same sense as in the United States. There, a college means an institution to which boys or girls go after they have been graduated from high school, or a preparatory school, or which they may enter by passing the entrance examinations. After a college course of three or four years, they receive a degree if they have passed their examinations. Such a college may, or may not, be a part of a university. In Canada, some colleges give degrees, some are parts of a university, some are "affiliated" with a university which gives the degree when satisfied that the students are worthy. Some teach their students on certain subjects, while in others they attend classes in a university college. Still others do not give degrees, but only prepare students for the university. The best-known institution of

the last kind is Upper Canada College at Toronto, which has a wide reputation, and draws students from the United States. Bishop Ridley College, at St. Catharines, is another well-known school of this kind.

In some of the Provinces there are agricultural colleges which teach scientific farming, and technical colleges which train men for engineering, mining and the like. Some of the universities also include similar colleges, and there are schools of domestic science to teach the proper management of a household.

THE UNIVERSITIES OF CANADA

There are about twenty institutions with university powers in Canada, but not all of them are real universities. Some of them are too new to have developed all departments, or to have gained a wide reputation. Some of them are too poor to build the great laboratories necessary for advanced institutions in science, engineering and medicine, or to pay great scholars to join their faculties; for the fees which can be charged for university education, can never pay the cost of instruction. The remainder of the cost must be made up by the state, the church, or by gifts from private individuals. The wealthy men of Canada have made many large gifts to some of the universities.

Six of the Provinces have Provincial universities. These are New Brunswick, Ontario (the University of Toronto), Manitoba, Saskatchewan and Alberta; British Columbia is developing a great university. McGill University was founded by a private individual, and has been endowed by others. The other universities are more or less under the care of different churches.

The best-known universities in Canada are Laval, the great Roman Catholic institution at Quebec, with a branch in Montreal; McGill, in Montreal, with its many schools and affiliated colleges; Queen's, at Kingston, founded by the Presbyterian Church, but now attended by many of other denominations, and the University of Toronto, the largest of them all. In all of them, as well as in some of the less-known institutions, are great scholars, some trained abroad, others in the United States, and still others products of Canadian institutions.

THE NEXT STORY OF CANADA IS ON PAGE 5543.

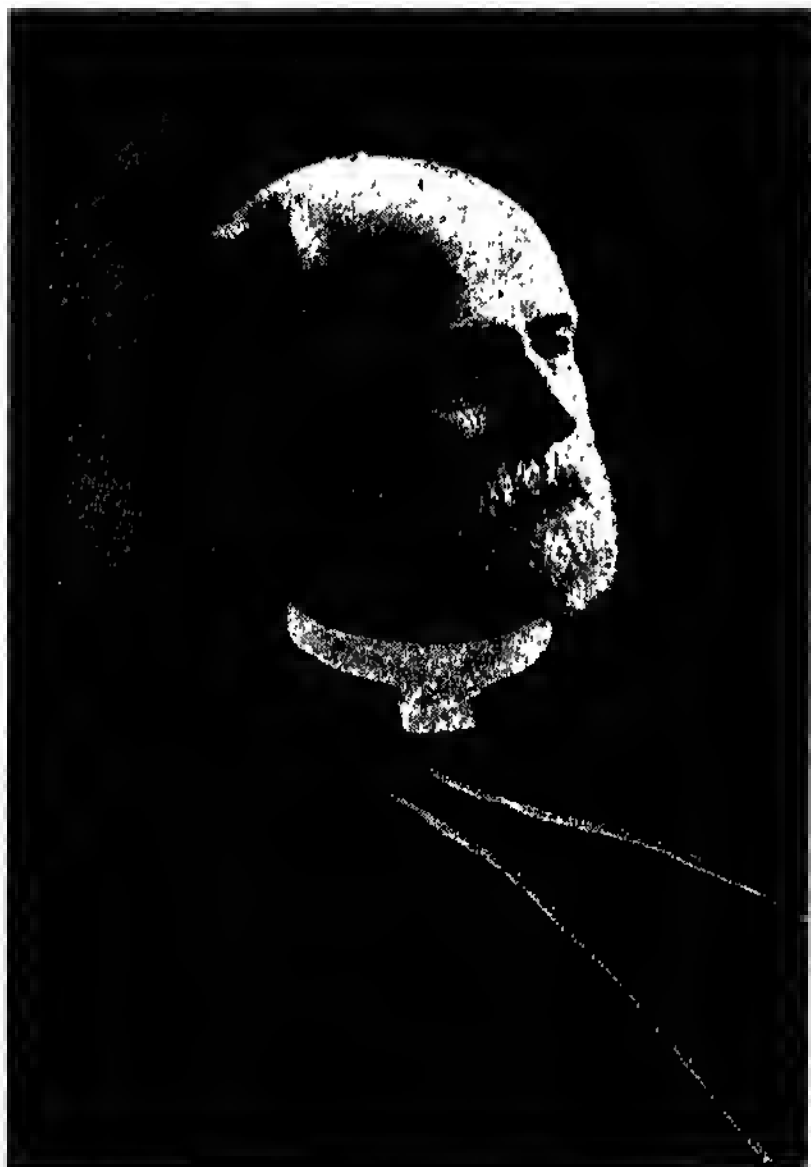
FOUR WELL KNOWN EDUCATORS



William Peterson, LL. D., Principal of McGill University since 1895, was educated at Edinburgh, Gottingen and Oxford, and before coming to Canada was Assistant Professor in the University of Edinburgh, and Principal of University College, Dundee. In 1915, he was made a knight.



Robert Alexander Falconer, D. D., LL. D., President of the University of Toronto since 1907, studied at Edinburgh, Leipzig, Berlin and Marburg, and served as Professor in and Principal of Pine Hill College, Halifax. He was born on Prince Edward Island, and has also received knighthood.



Very Rev. Daniel Miner Gordon, D. D., LL. D., Principal of Queen's University, Kingston, from 1902 to 1916, was previously Pastor of St. Andrew's Church, Halifax, and later Professor in Halifax Presbyterian College. He was born in Pictou.



Sir William Osler, a famous teacher of medicine, is here shown as a young professor at McGill University. He is a native Canadian, and was educated at Toronto, Montreal, London, Berlin and Vienna. He is now Professor at Oxford.

FOUR EDUCATIONAL LEADERS



Dr. George W. Parmelee, English Secretary (Deputy Minister) of the Department of Public Instruction for Quebec since 1891, was previously Professor of English Language and Literature in McGill Normal School, Montreal.



A. H. Mackay, LL. D., Superintendent of Education for Nova Scotia since 1891, was previously Principal of the Pictou Academy, and of the Halifax County Academy, and Lecturer in Biology in the University of Dalhousie.



Duncan Stewart MacKenzie, Deputy Minister of Education for Alberta from the organization of the Province in 1917, was previously Deputy Commissioner of Education for the Northwest Territories, of which Alberta was formerly a part.



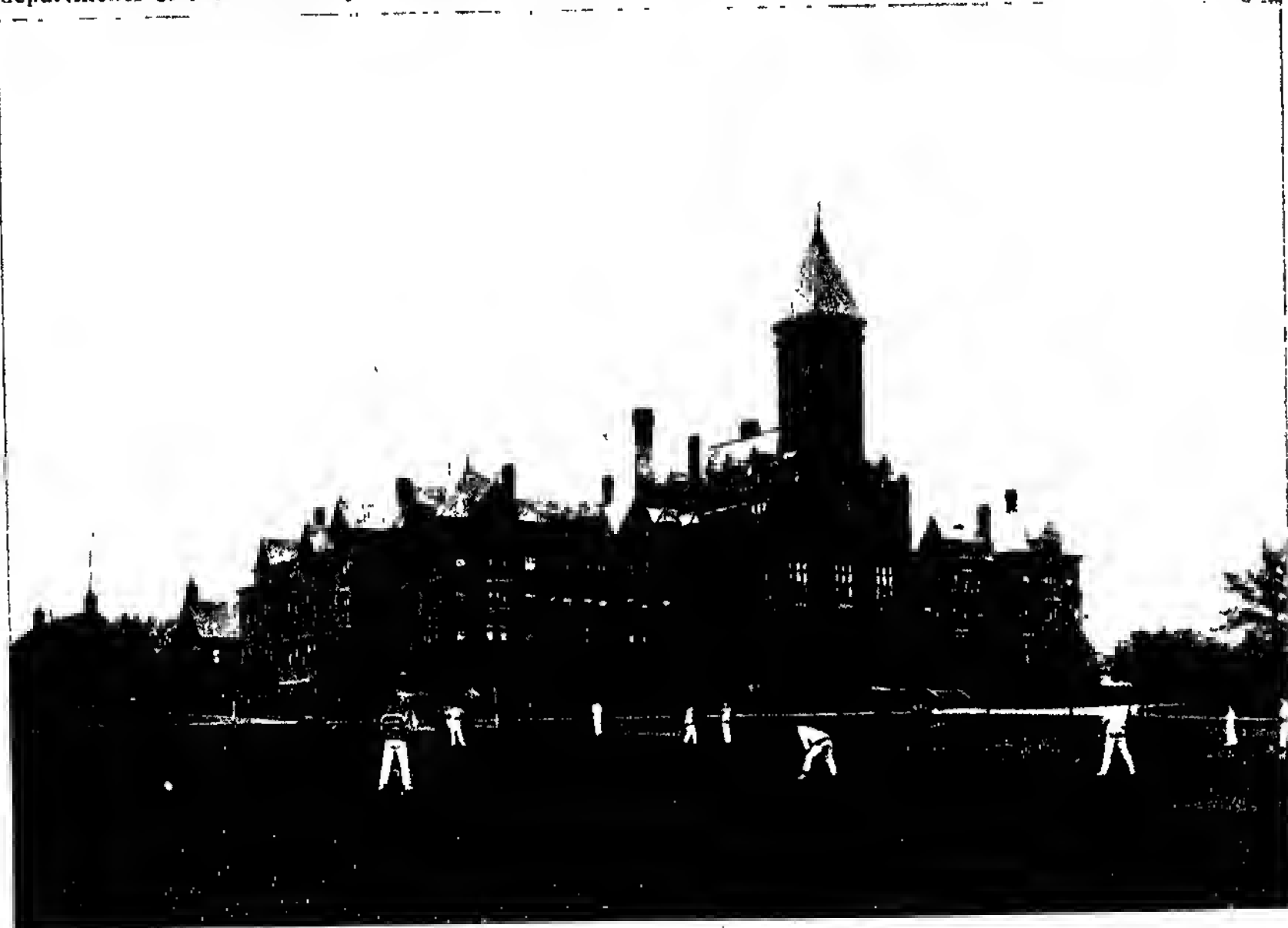
Robert Fletcher, Deputy Minister of Education for Manitoba since 1903, had served as Mathematical Master in the Collegiate Institute at Portage la Prairie, and as Lecturer in Mathematics at St. John's College, Winnipeg.

TWO MORE CANADIAN INSTITUTIONS



Photograph by Kiscock, Montreal.

This view of the campus of Queen's University shows Ontario Hall (to the left), Fleming Hall, and John Carruthers Hall. All of them are used by the School of Mining, which is one of the strongest departments of the University. The Library and the Theological Buildings are very attractive structures.



Photograph by Pringle and Booth, Toronto.

Upper Canada College, in Toronto, occupies imposing buildings, on an attractive site, beyond the University. In it many boys have been well prepared for the universities, or have received training which has been of service in the duties of life. Its patronage comes from many directions.

WINTER SPORTS IN COLLEGE LIFE

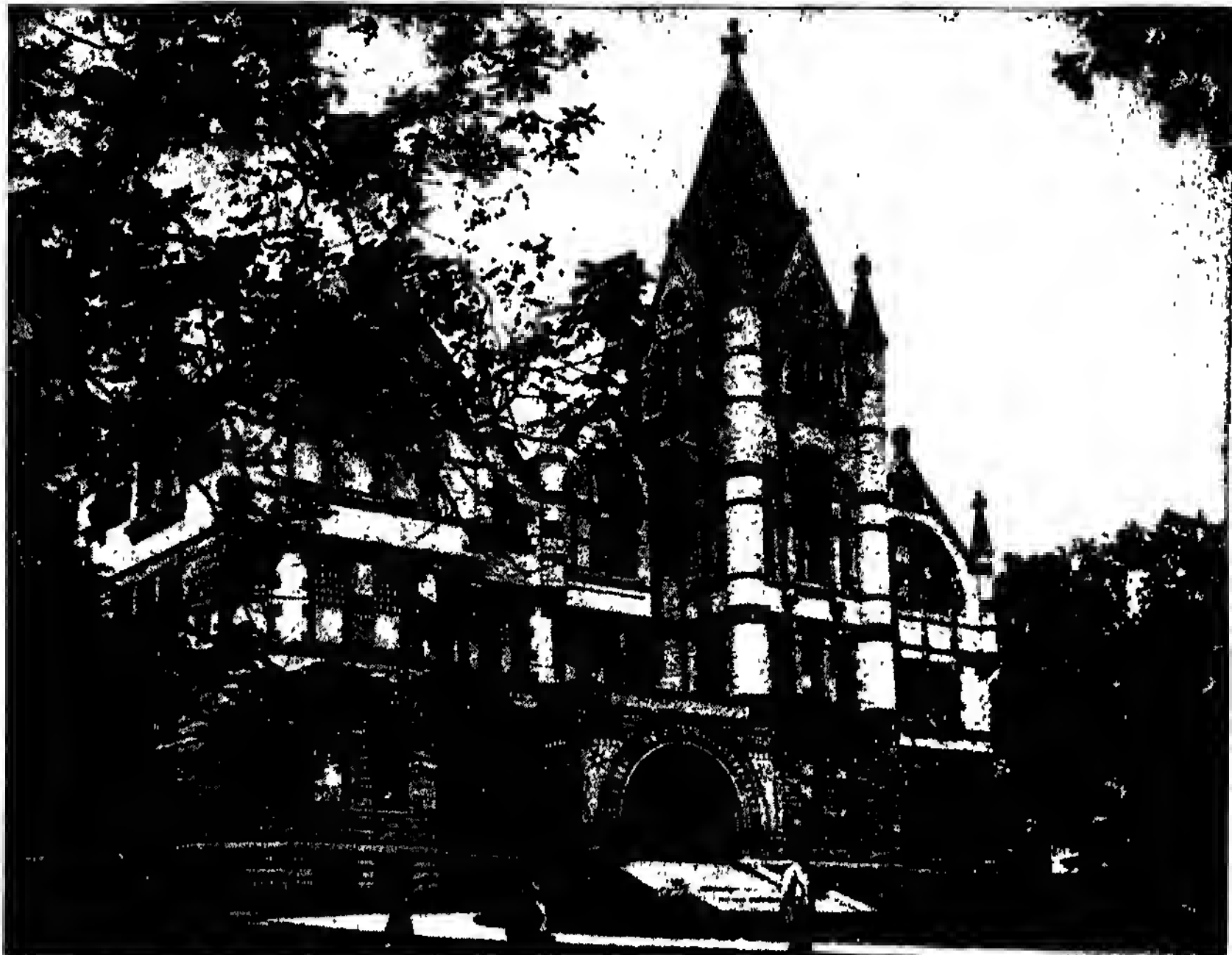


Sports are a characteristic of college life, and many a man learns quickness of mind and eye in the playing fields and gymnasium. These men are out on a skiing expedition. Skiing was introduced from Norway, and quickly became a popular sport in Canada. A tramp on skis, through the snowy fields, in midwinter, sets the blood coursing rapidly through the veins and gives a feeling of joy in life that nothing can surpass.



This picture shows a group of students at a hockey game. The game of course is often played in a closed rink; but a game played on an outdoor rink, in the bracing air of a winter day, is much more healthful. Because of the long winters, Canadian hockey players become very skilful, and some of the college teams play very rapid games. The game requires the exercise of rapid thought and quick judgment.

TWO OF THE SMALLER COLLEGES



This is Victoria University, in Toronto, which has been federated with Toronto University. It is quite an old college, and was at one time in Cobourg, where the old buildings stood in wide grounds with fine old trees. Victoria is what is called a denominational university, and is upheld by funds given by members of the Methodist church. Many of the Methodist clergymen in Canada are graduates of Victoria.



This fine old building is part of the University of New Brunswick in Fredericton. When this old building was first erected it was called King's College; but after it was made the provincial university the name was changed. It is one of the small universities that do good work, and to which men look back with affection in their later years. Charles G. D. Roberts and Bliss Carman were students of this university.

RALEIGH'S FIRST MEETING WITH QUEEN ELIZABETH



Sir Walter Raleigh was a man of quick decision and resource, and the story of his first encounter with Queen Elizabeth is typical of him. The queen had just come out of her palace, and seeing a puddle she hesitated about stepping into it. In a moment Raleigh laid his plush coat across the mud for Elizabeth to walk on.

The Book of MEN & WOMEN



SIR WALTER RALEIGH WRITING IN HIS DUNGEON AT THE TOWER

SIR WALTER RALEIGH

THE FOUNDER OF THE BRITISH EMPIRE

WE should keep a warm place in our hearts for the memory of Sir Walter Raleigh, who tried to found a British Empire over the seas. It was in his great, far-seeing mind that there dawned the idea of carrying people from the British Isles to build up new Britains in strange and savage lands. He was a warrior, an explorer, a historian, and a poet. It is true that he was far from perfect. He lived in wild and lawless times, when it was deemed not dishonorable for English noblemen to send ships to sea to act as something very like pirates. If they succeeded, they were honored; failure was looked upon as a great crime.

Raleigh was born at Hayes, near Budleigh Salterton, Devonshire, in 1552. The little Walter was a born hero, and loved to haunt the beach at Budleigh, there to feast his mind on stories of strange lands and strange peoples across the wide waters, poured into his willing ears by bold sailors resting in the little town after the hardships of their voyages.

Born to an adventurous life, Raleigh had talent for scholarship also, and we find him, when only sixteen years of age, a student at Oxford University after he had done

CONTINUED FROM 5316



well at the schools round about his home. He stayed for a year at Oriel College, and then, at seventeen, he opened his career of daring. He went to France and fought in the Huguenot army, and saw several battles. He remained abroad five years, and it is thought he was there during the frightful massacre on St. Bartholomew's Eve, and witnessed horrors which possibly prompted him to denounce religion persecution, as he did in later years.

He never flinched from shedding blood when he thought that severe measures were necessary. A rebellion sprang up in Ireland, and he went there in search of adventures. He had by this time followed up his adventures in France by making a voyage with Sir Humphrey Gilbert, and by taking a part, it is believed, in the wars in the Low Countries. He was, therefore, a well-trained soldier when he went to Ireland in 1580 to help to put down a rebellion.

Some 600 Spaniards and Italians had landed in Ireland, and had encouraged the Irish to rebel against England. They had garrisoned a fort at Smerwick, and when they were conquered, Raleigh was ordered to punish them, and he executed

JULIUS CAESAR

HERBERT SPENCER

every one of them. That seems a terrible crime in our days, but it was deemed then quite the right thing to do.

During this campaign Raleigh became the friend of Edmund Spenser, the great poet, and afterwards succeeded in having him introduced at the English court. Meantime, however, Raleigh, though he had once or twice appeared at the court of Elizabeth, had not yet been recognized there. After the Irish adventure, however, he was sent to London with a report of the battle. There, the Earl of Leicester, who was at this time a favorite of Queen Elizabeth, befriended him and he was soon greatly favored by the queen.

HOW QUEEN ELIZABETH WALKED OVER THE RICH ROBE OF SIR WALTER RALEIGH

Queen Elizabeth was at this time nearly fifty years of age; Raleigh was not yet thirty. He was tall and handsome, with dark, luxuriant hair, and a complexion like that of a Spanish beauty. He was graceful and active, and a man of great physical power, known to be as brave as a lion; he was a charming poet, a man of much learning, and gifted with fiery eloquence. He had courtly manners, and was always well dressed in the rich fashion of the time.

What wonder, then, that he should win the heart of the vain though able queen? The story of their first meeting is well known, but we may recall it. The queen, on leaving her palace, had found a muddy puddle lying before her. Raleigh, who saw her distress, instantly stripped off the rich velvet cloak which he wore, and spread it before her so that she walked dry-shod over the mud. Very soon Raleigh became prime favorite of the queen, and she showed him many favors. She allowed him to levy taxes upon wines and woollen cloths; she made him warden of the royal mines in Cornwall and Lord Lieutenant of that county. She knighted him, and he was elected a member of Parliament. For five years Raleigh had no rival at court, and in this time he acquired great riches, and spent them as liberally as they came on the great ventures of the time.

THE FIRST MEMBERS OF THE HOUSEHOLD CALLED THE BRITISH EMPIRE

It was in 1584 that he fitted out at his own cost an expedition to explore the American coast north of Florida. The queen agreed to the plan, though she could not bear to let Raleigh himself go.

The sailors of his fleet had good fortune, and took possession for Raleigh of a great area of land which Queen Elizabeth, "the Virgin Queen," herself named Virginia. Next year Raleigh sent out a strong fleet with people who were to settle down in the new land, the first colonists ever sent out by England. They settled on Roanoke Island, now in North Carolina. Up to that time Great Britain did not own a foot of land beyond her own borders. Raleigh's scheme gave her the foundation of her Colonial Empire. The venture was not a success. Several ships were sent out. One hundred men remained for a year, and then were brought home. Next, fifteen men were left, but they disappeared. After that a party of 150 colonists, of whom twenty-five were women and children, was despatched. The governor left them on the island of Roanoke while he went back to England for supplies. It was four years before he could return, and then he found the island deserted. The whole party, including his little granddaughter, the first white child born of English parents in the country, had disappeared, and were never heard of again.

Raleigh then gave up the effort. It had cost him \$200,000 out of his own pocket, a sum equal to about a million dollars at the present day, and, so far as he was concerned, the scheme was a failure. But it gave the people of Great Britain a new idea. The importance of oversea possessions began to be realized, and there grew up the idea of a large fleet of ships, both for trade and for war, which has since made that country the greatest naval power the world has ever seen.

THE FIRST POTATOES GROWN IN IRELAND AND THE FIRST TOBACCO GROWN IN ENGLAND

A cloud now appeared upon the horizon of Raleigh. A new court favorite appeared in the person of the Earl of Essex, and Raleigh, who could not tolerate a rival in the favor of his sovereign, quitted the court and went to Ireland. His visit was important to Ireland. The queen had given him an estate there, and in his garden in the town of Youghal, of which he was for some time mayor, he planted the first potatoes ever grown in that country. These had been brought back, with some tobacco, by some of the men whom he had sent to the New World.

SIR WALTER RALEIGH

Potatoes have proved of immense importance to the whole of Europe, but to no other country are they more vital as food than to Ireland. Raleigh was the first man of rank to smoke tobacco in England, and the first tobacco ever grown there was in the garden of Lord Burghley, in the Strand.

The coming of the King of Spain's great Armada soon recalled Raleigh from Ireland. He had already taken steps for the defence of his county, but he was too late to take part in the battle. It is said that the flagship of the British fleet had

fitted out, largely at his own cost, another and larger fleet for the same purpose, and was allowed by the queen to go out with it to a certain point, to start it well on its way. When he returned to London, he was immediately cast into the Tower. The reason was that, while enjoying the favor of the queen, he had dared to fall in love with Elizabeth Throgmorton, one of the queen's maids of honor. The old queen, who had had so many lovers, could not endure such a thing in her favorite, and kept him a close prisoner for six months, treating the unfortunate



THE POET SPENSER READING HIS POEM, "THE FAERIE QUEENE," TO SIR WALTER RALEIGH

been built from designs that Raleigh had made. Gradually Raleigh recovered his lost position at court, and persuaded the queen to fit out a fleet to attack the Spaniards. She would not let *him* go, but his valiant cousin, Sir Richard Grenville, went, and his little ship, the *Revenge*, left to itself, fought a marvelous battle against the whole Spanish fleet.

Raleigh afterwards celebrated the feat in a magnificently written narrative, and 300 years afterwards his story formed the foundation upon which Tennyson based his poem, "The Revenge." Raleigh now

Elizabeth Throgmorton in the same way.

Raleigh's imprisonment was ended in a strange way. The fleet which he had sent out brought home a richly laden prize. So great was the disorder among the dishonest people of the port that Raleigh had to be released from prison to go down to Dartmouth to keep order while the affairs of the prize-ship were settled. For this he was given his liberty and \$180,000, only \$10,000 more than he had spent on the expedition. He quietly married the lady of his love, and

settled down at Sherborne, in Dorsetshire, where he had an estate.

But his active mind was soon busy with larger schemes than house-building and tree-planting. There were many rumors of a city of fabulous wealth in South America. Prevented from going himself, Raleigh sent out a ship to seek this city of silver and gold, and though from this he got no definite news, he was sufficiently satisfied to set out in search of it himself. He reached the Island of Trinidad at the mouth of the river, where he left his ships and in small boats went up the River Orinoco, and along some of its tributaries, fighting against tremendous currents, and against sickness and privation. He was compelled to turn back, but brought with him quartz containing gold, and also the first piece of mahogany ever seen in England. When he got back, his enemies declared that the whole story of his exploration was false. To prove his case, he wrote a splendid book called "The Discovery of Guiana," that being the name by which the country now called Venezuela was then known. He drew maps showing his route, and long after his death all his statements were proved to be true. A gold-mine of which he spoke was actually discovered in 1849. Raleigh's next exploit was in an expedition against Cadiz. He was not the leader, but it was upon his advice that the two leaders acted, and the action was a great triumph for his military genius. In another naval action, under Lord Essex, he again distinguished himself. Indeed, had it not been that the queen was at first so fond of him that she would not let him go out on the earlier expeditions, Raleigh's career on the sea might have been the greatest of the age. Raleigh's success in the second action made Essex, his old enemy, jealous. Essex never forgave him, and after many intrigues he declared that Raleigh had tried to have him murdered, a story that proved to be utterly false.

HOW RALEIGH WAS TRIED FOR HIS LIFE ON A CHARGE OF TREASON

Essex was eventually executed for rebellion, but Raleigh's enemies remained many and powerful. They had their way at last when, in 1603, Elizabeth died, and James VI. of Scotland—a man who in many ways was unworthy of respect—became King James I., of England. Raleigh's enemies pretended to James

that Raleigh had tried to prevent him from coming to the English throne, and James removed him from all his offices. Soon Raleigh was brought to trial on a charge of treason and conspiracy. Raleigh behaved magnificently, with the eloquence of a scholar and orator, and with the dignity and firmness of a hero, but he was condemned to death.

The trial created a great impression. Many men had been offended by his haughty ways, but at this trial they remembered what he had done for the honor and glory of the country. One who had hated him said: "When the trial began I would have gone a hundred miles to see Raleigh hanged; before the trial closed I would have gone a thousand miles to save his life."

Raleigh was taken back to the Tower, but the king dared not carry out the sentence of death. He left Raleigh to languish in prison. His wife and family were allowed to live there, too, on paying \$1,000 a year. Here Raleigh was visited by the great scientists and poets and scholars of the day, some of whom were, like himself, prisoners in the Tower. His best friend, however, was Prince Henry, the eldest son of King James, a fine young prince. The prince loved Raleigh, and declared: "No man but my father could keep such a bird in such a cage."

HOW THE TRAVELER WROTE THE HISTORY OF THE WORLD IN A DUNGEON

For the guidance of the prince, Raleigh wrote some notable works on politics and statesmanship, and began for him his famous "History of the World." This ran to 1,300 pages before the young prince died, and Raleigh then lost heart, and left it unfinished. In it is some of his noblest writing, but it was so frank that the king had it suppressed, because he said it spoke "too saucily of kings."

Raleigh had a little laboratory in the Tower, which he made out of a poultry-house, and in this he conducted many scientific experiments. He found out how to get pure salt from sea-water—an art of which we hear little more until 300 years afterwards. For thirteen years he was kept a prisoner, and men grieved for him. The thought of this great traveler, warrior, and scholar cramped in the little cell at the Tower, which we may see to-day, made their hearts bleed.

In 1616 he was released to go on another treasure-hunting expedition up

the Orinoco. He was allowed to leave prison on the condition that he should bring back to England at least half a ton of gold ore similar to the piece he had previously brought. "It is very difficult," answered Raleigh, "for any man to find the same acre of ground again in a country desolate and overgrown which he hath seen but once, and that sixteen years since." Still, he was willing to try.

THE LAST SCENE IN THE LIFE OF ONE OF THE GREATEST ENGLISHMEN

His crew was composed for the most part of bad characters, and the expedition was a hopeless failure, dogged by storms and sickness. From the first misfortune crowded upon the new venture, Raleigh was held back for months in Plymouth Harbor by the need of money to provision his ships. This difficulty was overcome, and he set sail, only to be forced by storm to take shelter and refit his ships in Cork Harbor. All this took time, and it was not until August that he at length got away on his last voyage. Even then he was followed by misfortune. One of his captains, who was a traitor, left him at the Canary Islands, and went home with a lying tale which was afterwards used against him. He encountered terrible storms, and sickness broke out in the fleet. Several of his officers and his friend and servant, John Talbot, who had shared with him his imprisonment in the Tower, died. Still, in spite of all, he was free for the time, and we can picture the white-haired gallant old man as he walked to and fro on the deck of his little ship, thinking great thoughts of the future of his country, or made observations which afterwards helped other men to avoid some of the dangers he had run.

He reached the coast of South America in November, and prepared to ascend the Orinoco. But he was so ill that he was unable to undertake the hardships of the voyage up the river, and was compelled to entrust the leadership to the captain of his own ship—Captain Kemyss. The result was failure. Near the mine the party was met by armed Spaniards, and Raleigh's son was killed. The Spaniards were beaten back, but the men became mutinous. Kemyss could only lead them back again, and after he had met Raleigh and given his report he killed himself. Raleigh scarcely dared to think of returning home empty-handed. He thought that he would, as in the old days,

capture some Spanish treasure-ships. "They do not call men pirates who capture millions of money," he argued, in the manner of the times. But the men would not follow him, and he had to return home penniless. There had been some fighting between his men and the Spaniards, and as there was peace at this time between England and Spain, this fighting was declared to be a crime worthy of death. Indeed James had promised the King of Spain that if Raleigh landed at any place to which Spain laid claim as her own, he should be executed. James knew that Spain claimed both the shores of the Orinoco as well as every other place in South America, and, therefore, Raleigh's death had been determined on even before he had turned his ship's head toward home. So Raleigh was again cast into the Tower, and led forth to execution at Westminster on October 29, 1618. He was courageous and dignified to the last.

It has been said that on the last night of his life he wrote a beautiful little poem, for which his name will be remembered, but the poem was written long before the last night came, and not in view of the terrible fate which befell him. The poem is called "The Conclusion":

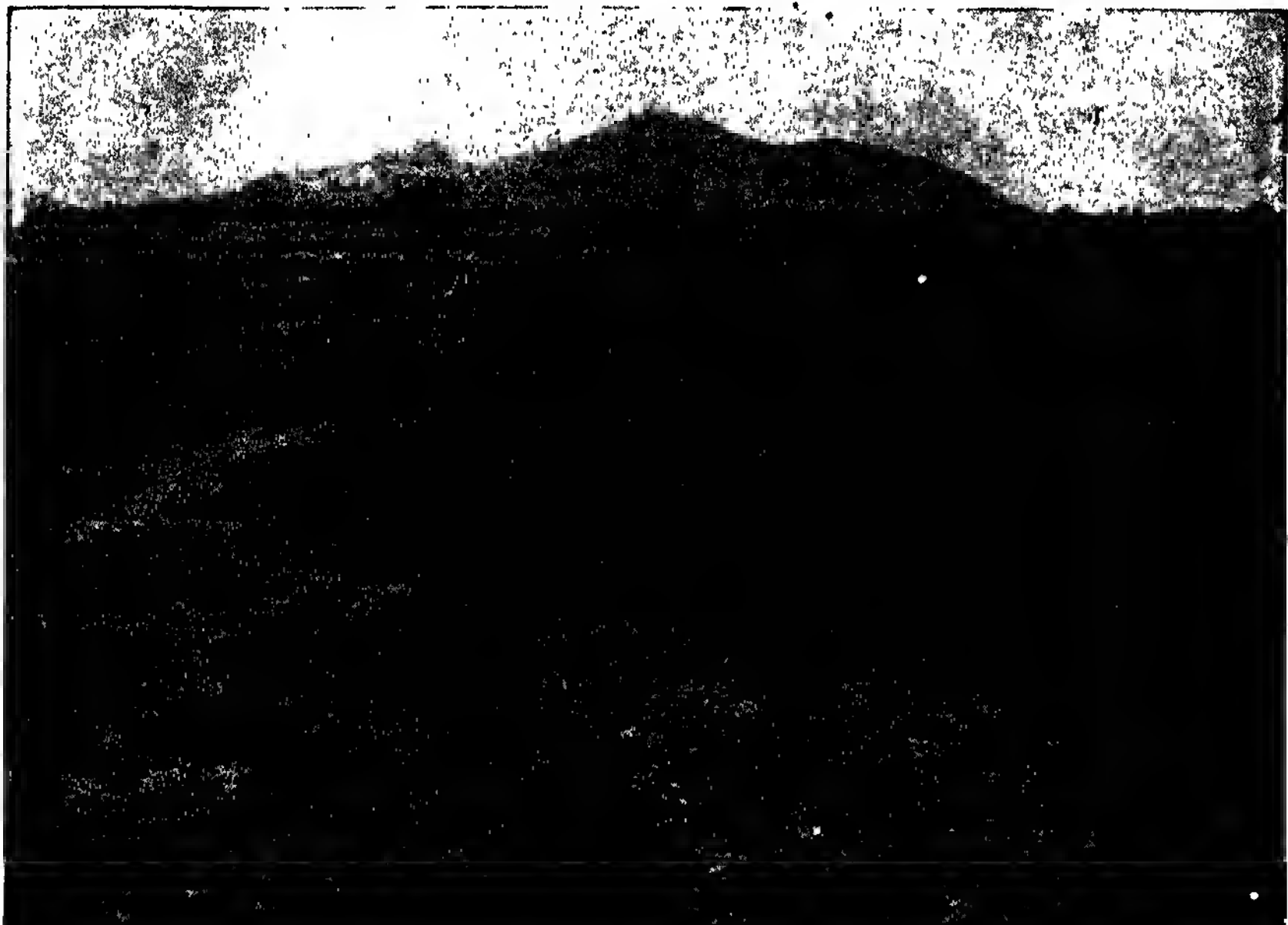
Even such is Time, that takes in trust
Our youth, our joys, our all we have,
And pays us but with earth and dust;
Who in the dark and silent grave,
When we have wandered all our ways,
Shuts up the story of our days;
But from this earth, this grave, this dust,
My God shall raise me up, I trust.

As he laid his head on the block, someone said that he ought to kneel with his head towards the east. "What matter," said Raleigh—"what matter how the head lie so the heart be right?"

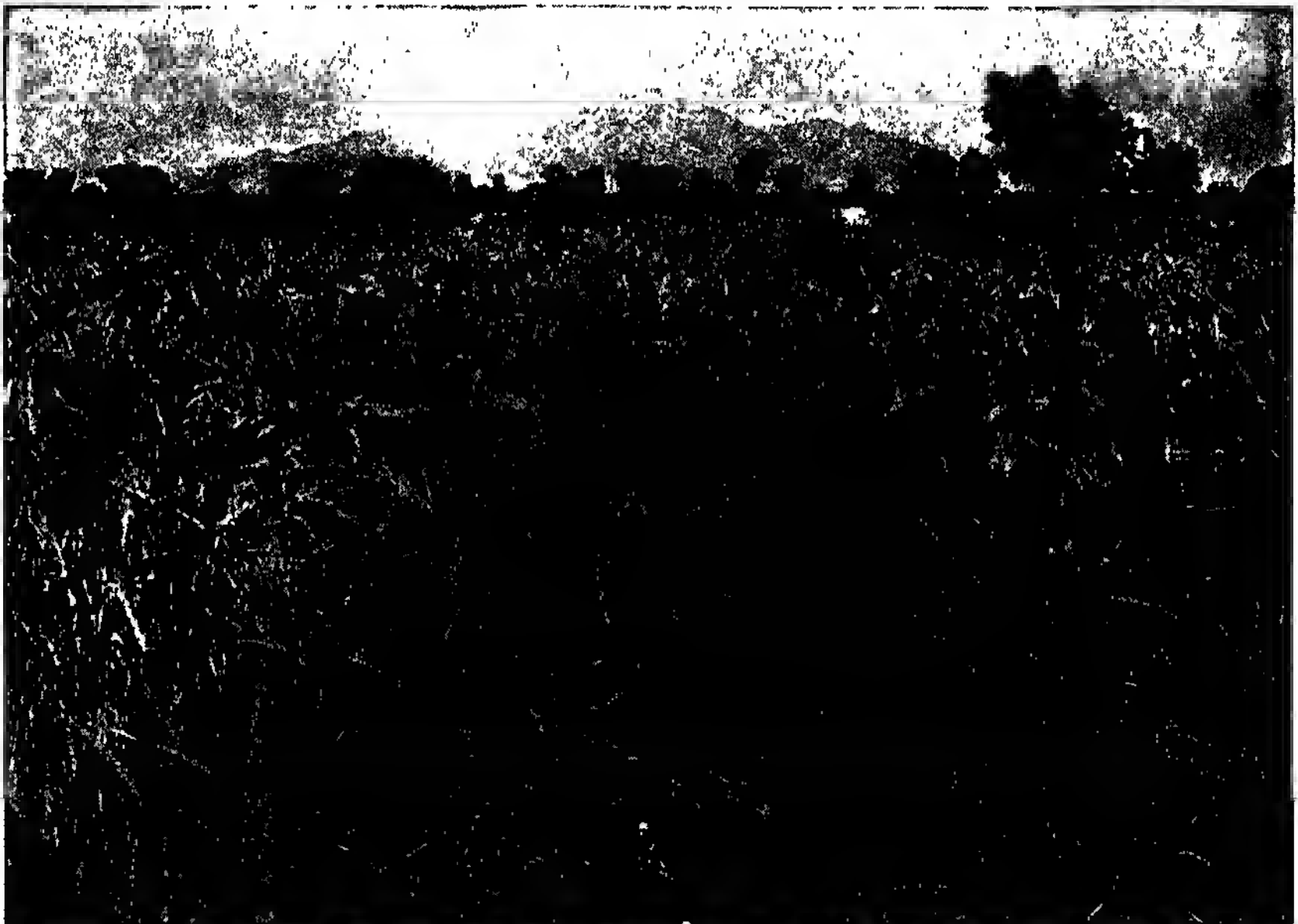
So perished one of the greatest men of the great days of Elizabeth. He was not a perfect man; no man is perfect. He had grave faults, but they were the faults of his time. With all his failings he was a hero and a scholar of the highest type. In happier days he might have become famous throughout the world for science, literature, and poetry. With a queen less anxious to keep him at court, he might have become immortal as an explorer and an admiral. As it was he left a record for gallantry and learning equaled by very few men of any country.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5483.

WHAT WATER DOES FOR BARREN GROUND



This barren land has all the elements necessary for plant growth present in the soil, but the sparse vegetation shows that something is lacking. Only a small amount of grass and some straggling bushes struggle to live. There are thousands of acres like this in Western United States. Only water is lacking to make the desert blossom. Look at the picture below and see what happens when water is given to the soil.



This is the same field some time afterward when water has been turned upon the soil. Notice the luxuriant growth of wheat in the foreground, and the signs of human life in the background. Thousands of acres of worthless land have been made fruitful by the application of water. Notice the mountains in the background of both pictures and the line of trees show that the places are the same.

The Book of FAMILIAR THINGS



This picture shows the beginning of the great dam at Assouan, which has turned the banks of the Nile into a flourishing garden by storing up the waters of the river for use in time of drought.

MAKING THE DESERT BLOSSOM

THOUSANDS of years ago men knew that they must have water or die.

Land without water is but a parched and arid wilderness, and the truth of this is quickly brought home to dwellers under a glaring sun and in shimmering heat. The greatest blessing for which the ancients longed was to dwell "in green pastures by living waters." Their greatest misery was "a dry and thirsty land where no water is." When the Preacher in the Book of Ecclesiastes speaks of "the pitcher at the fountain, or the wheel broken at the cistern," we have a sad picture of what will follow in the hot and dust-blown countries of the East. For he continues, then "man goeth to his long home." To-day the name given by the Arabs to Damascus is "earthly paradise," because of its flowing streams and luxuriant vegetation.

EARLY ATTEMPTS TO WATER THE LAND

In many of the countries bordering the Mediterranean, to the east in Mesopotamia, India and China, and to the west in Mexico and in South America, men learned very

CONTINUED FROM 5325

early to make use of the water available to them. In many cases the

streams coming from mountain regions would be swollen at certain times of the year by rains or melting snow. Some of these peoples learned to guide this overflow by rough dikes and rudely constructed ditches, and later built canals to bring the water out to lands which would not be overflowed naturally. Others had even more skill and understanding, and stored their waters for time of need in the dry season. They built great walls across their rivers, thus constructing reservoirs or store-houses for the water. About two hundred years before the birth of Christ, one of these great storage dams, built partly of hewn stone across the valley of Saba in Arabia, broke down, and eight tribes had to leave the district which the water had before supplied.

EARLIEST AND SIMPLEST FORM OF WATER-RAISING MACHINERY

The sculptures and paintings of Egypt show the peasant raising up water from the Nile four thousand years ago. By a simple plan of raising water and pouring it over

the fields, thousands of acres are watered every year in India. The simplest and earliest form of water-raising machinery is a pole with a bucket at one end balanced across a beam, and a weight at the other end. All along the Nile banks, from morning to night, through many centuries, brown-skinned peasants have been working these buckets to raise the water on their lands. We may also see two men raising a shallow bucket by means of strings. Everywhere in Egypt and India, and in Japan, too, can be seen a rude water-wheel, with pots on an endless chain around the rim, worked by bullocks or by men.

THE COUNTRY WHERE IRRIGATION IS MOST HIGHLY DEVELOPED

Have you ever wondered why the Italians are such wonderful growers of vegetables and fruits? One of the reasons is that they have in the northern provinces of their country the most highly developed system of irrigation in the world. If you look at a map of Italy you will see that its northern end is encircled by a lofty range of mountains called, by a general name, the Alps. The rivers of this part draw their waters from the never-failing glaciers of the mountains, which melt when warmer weather begins. Thus the supply is available in summer when it is most required. It is so regular that the people are able to count on so many thousand cubic feet per second through so many months. A great Italian statesman and patriot, Count Cavour, about the middle of last century, organized a complete system for distributing this water. In each parish in the district is a council composed of all landowners who irrigate. Each council sends two members to what may be called a "water parliament," which manages the whole scheme. The irrigated area is divided into districts, in each of which is an overseer and a staff of watchmen to see to opening and shutting of the gates which deliver the water into smaller channels. In November every year it is decided in the "water parliament" how much water is to be given to each parish in the following year, and this depends on the number of acres of each crop to be watered. The Italian farmer submits very loyally to whatever regulations are made, though sometimes if he opened a sluice during a dark night and allowed

the water to run for a few hours he might double the value of his crop.

A LAND WHERE FAMINES RECUR REGULARLY

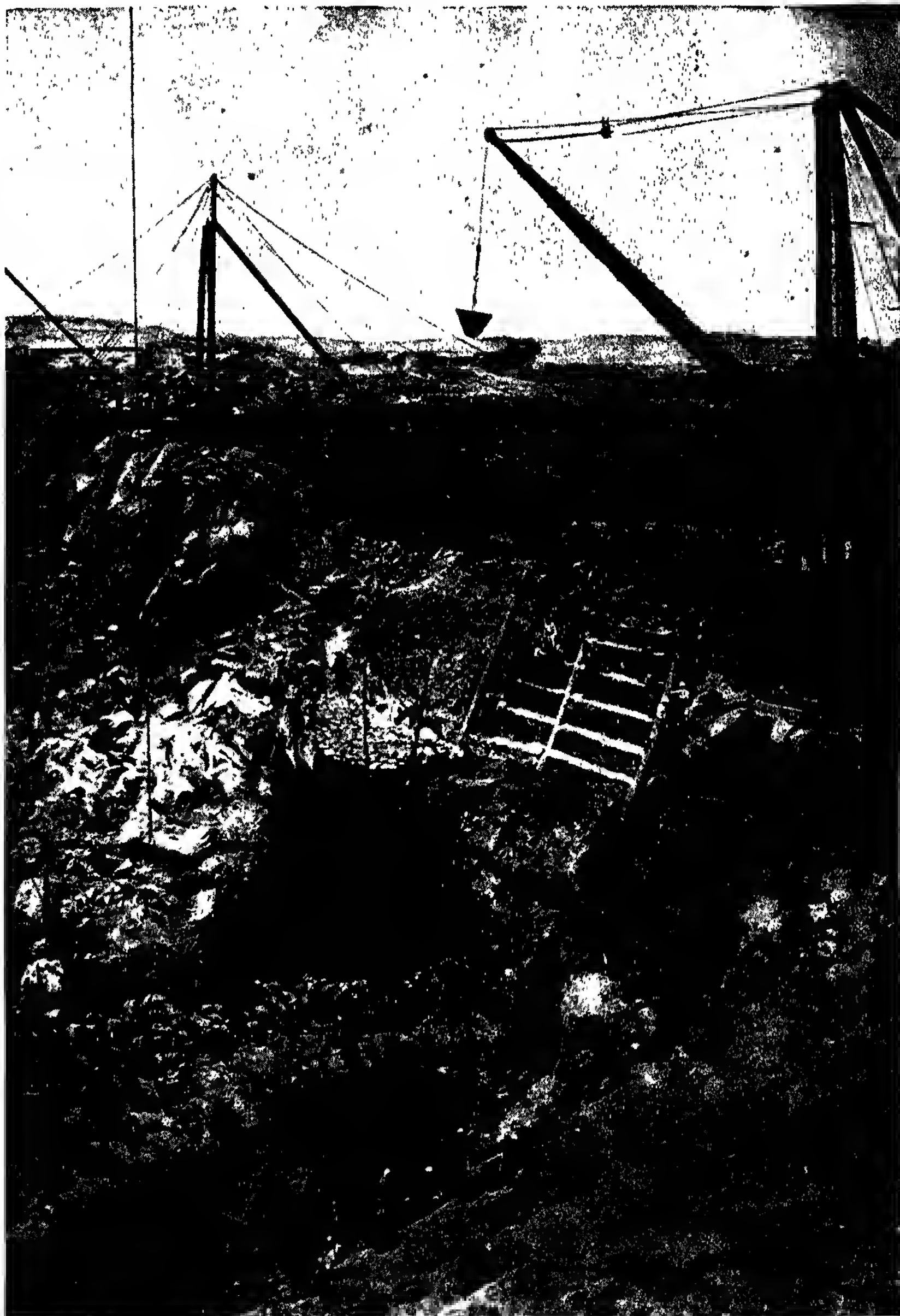
Parts of India are nearly rainless, and there can be no cultivation without irrigation. Other parts have a heavy rainfall at certain seasons, and are rainless the rest of the year. Rice, a very valuable crop, is almost a water plant, and needs a constant supply passing over it. Maize and millet, which form so large a portion of the peasants' food, can be raised without irrigation in ordinary years, but about every eleven years comes a season of drought. These droughts have been followed by terrible famines in which thousands of people have died. Since about 1878, which saw the end of a very bad famine, there has been a large sum of money set aside every year to provide for irrigation and reservoir works. The Chenab Canal, the largest in India, which waters the province of the Punjab, has turned land that was practically desert into a thriving agricultural region inhabited by prosperous peasants. Similar canals stretch like a network from the sacred river of the Hindoos, the Ganges, upon whose banks live a teeming population.

HOW THE WATER SUPPLY HAS BEEN CONTROLLED IN THE UNITED STATES

In much of the western half of North America, profitable farming depends upon an artificial supply of water. In many sections less than 20 inches of rain fall each year. An inch of rain means enough water to cover flat ground to that depth. In Arizona and New Mexico remains of water works have been found which date from very early times. When the Spanish explorers came to the Rio Grande in the first half of the sixteenth century they found the native inhabitants practising irrigation or artificial watering. The early Spanish missions also built works in that valley sometime during that century, and this, so far as known, was the beginning of modern irrigation in the United States. Some of the works made by the early Spanish settlers have been in use almost up to the present time.

In 1847 the Mormon settlers began to irrigate the Salt Lake Valley, Utah. This was the first Anglo-Saxon irrigation in the country. About twenty years after the work was taken up in Colorado

HARNESSING 1,000 MILLION TONS OF WATER



The great dam across the River Nile at Assuan, which stores up a thousand million tons of water for use as it is required, is one of the engineering wonders of the world. It took over four years to build, and contains more than a million tons of masonry and 75,000 tons of cement. Much of the granite used came from the quarries as the stone for the facing of the Great Pyramid, which contains five times as much masonry as the dam. Assuan was chosen for the dam because the river is there broken up by islands. Barriers were built above and below the site, and the water in between was pumped out so that foundations could be laid in the river-bed. Foundations were also laid on the islands, for the dam is built across river and islands.

and California. From these beginnings the practise gradually spread to the other states of the arid West. Fifty years later the census showed about seven and a half million acres under irrigation, which for the most part was brought about by farmers joining to plough out or dig ditches from the rivers. There were also some big structures for the sale of water, such, for example, as the Sweet-water dam of South California and the Arizona canal. Since 1900, when the United States began what was called its "conservation" policy, or the preserving of natural resources of the country—its forests and beautiful park lands—irrigation has made rapid progress aided by Government money.

THE HIGHEST DAM IN THE WORLD

In 1915 the highest dam now existing in the world was completed on the Boise River in Idaho. Dam and reservoir took five years to build. The Government invested over twelve million dollars in the scheme, and within twenty years the farmers will have returned this sum. Because of the supply of water now available, about 235,000 acres of barren sage brush desert will be turned into gardens, orchards, and farms, and the crops on many thousands of acres will be saved each year. The dam is 348.5 feet high, 1,100 feet long on top, contains 585,200 yards of concrete, and its crest carries a roadway 16 feet wide. When the water in the reservoir is needed for irrigation, it is carried twelve miles in the channel of the river to another low dam, and from there it is taken out over the land through a network of canals.

With irrigation, agriculture in an arid region yields larger returns from an area than in rainy regions, because daily sunshine is the life of plants. If we can supply moisture at proper times and in the exact quantity, we can make the values of ordinary farm crops from 50 to 75 per cent greater than in an equally well-farmed part of the humid region.

In Africa, under a pitiless, burning sun, rolling away into distance for ever and ever, lie over three and a half million square miles of desert—the Sahara, as big as all Europe. Half stifled by the dust half blinded by the glare, and half frightened by the terror of this immense waste of the earth's surface, generations

of men have gone by, leaving it there as a miracle of God, something that passes the power of man to alter, or the wit of man to comprehend. The Nile overflows its banks and leaves a coating of mud over a part of this desert. The people throw seed upon this slime, and wait for it to grow. But when the Nile failed to overflow its banks, famine came upon the land, and men used to die like flies.

The engineer came to the desert, looked at it, looked at the mighty Nile, and then said: "This can be altered!"

While the desert fainted for moisture, the Nile was carrying millions of tons of water to the sea. The engineer said: "I will stop that waste of water!" And then followed one of the mightiest works ever undertaken by the children of men. Two great dams were built across the Nile. There was a woeful outcry from sentimental travelers. "You will drown the beautiful ruins of Egypt; you will spoil the wonder of her scenery!" But the engineer worked on. His object was not to guard the pillars of an empty temple, but to convert ruin into life. And this he has accomplished. He has made the desert blossom and bring forth food for the use of man.

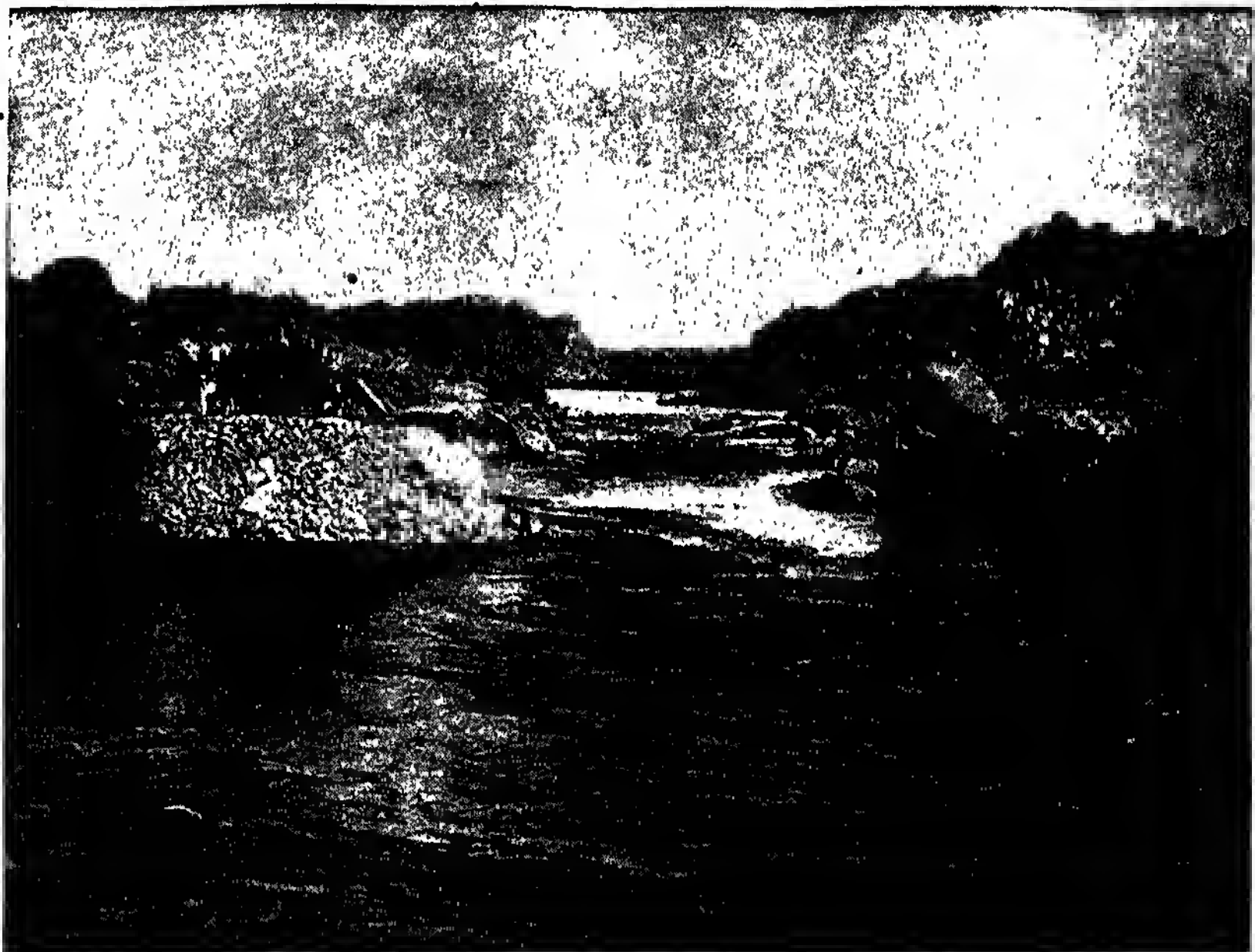
THE ROMANCE OF THE BRITISH ENGINEER IN THE LAND OF THE PHARAOHS

Camels, like those which crossed the desert with spice in the days of the Pharaohs, have been harnessed by the British engineer to this tremendous task; they have come across the desert with the implements he needed, and have stood beside the steam-engine, in the midst of masonry and stacks of steel and iron, listening to the clatter of the hammers, the scream of the engines, the shunting and bumping of the trucks.

Ten thousand descendants of the ancient Egyptians have worked under British instructors in the building of these dams, chattering in their ancient language as they carried steel forged in modern England. What an amazing romance it all is!

Perhaps it is best for the world that the engineer should not be honored as a great hero. But we do well to remind ourselves sometimes how enormous is the debt which civilization owes to this quiet, thinking man of action, who makes the earth a happier and a far more comfortable habitation for mankind.

SHUTTING OUT THE RIVER FROM ITS BED



The temporary barriers to close the channels were built by dumping huge stones into the river, and sometimes blocks weighing four or five tons were carried away like pebbles by the rush of water. In this way the river was diverted from the different channels in turn. Here a channel of the river is being closed.



This picture shows a channel almost closed. Masses of rock, four or five tons in weight, are being let down by a crane. Finally, trucks full of stones were thrown into the gap, and the barrier completed.

DIGGING A CHASM IN THE BED OF THE RIVER

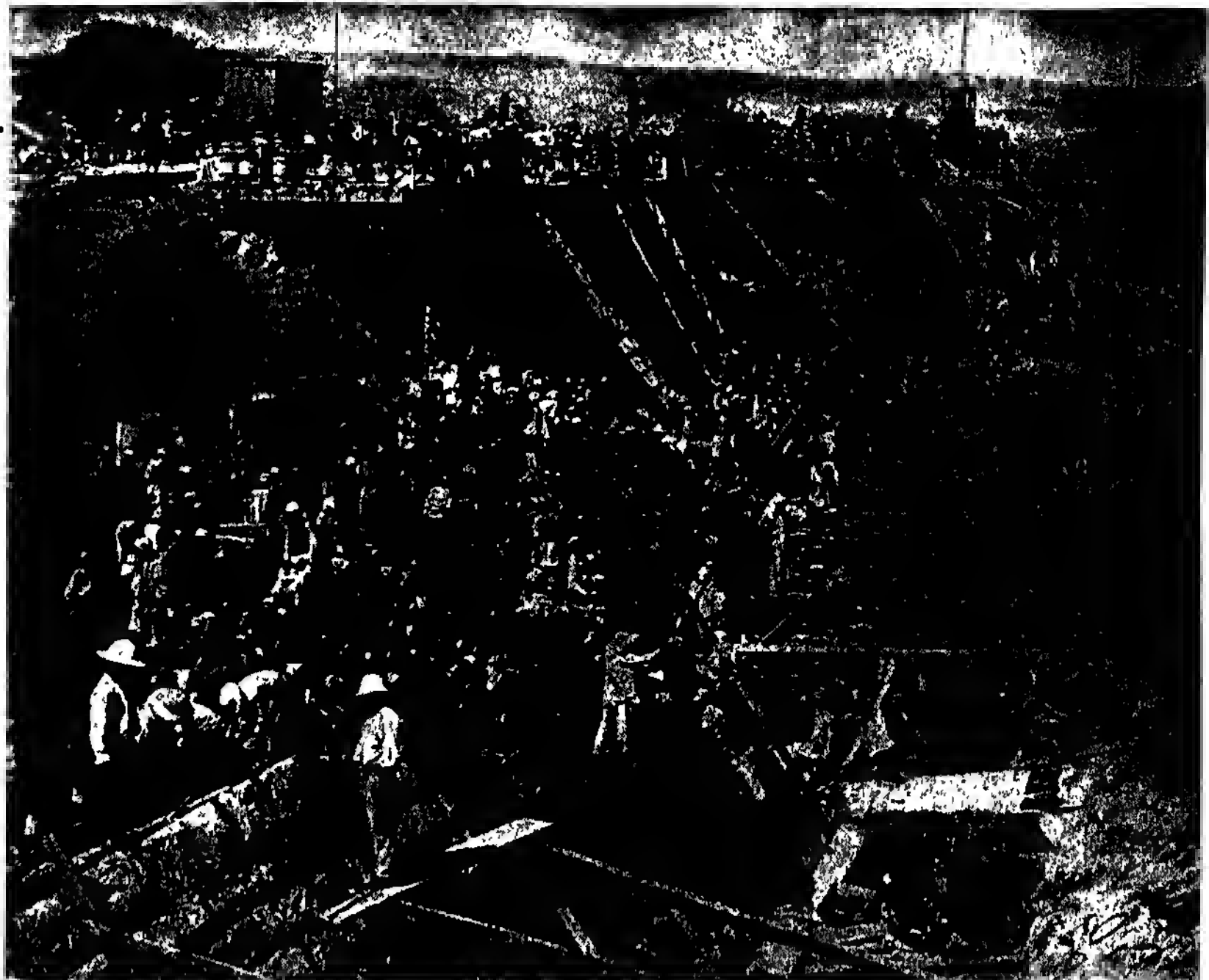


The stone barrier was supported by a barrier of sand, and another sand barrier was built down stream, with 1,500,000 bags of sand. It was not necessary to make the down-stream barrier so strong because the force of the water was broken by those up stream. Here we see one barrier completed and another nearly finished.



As soon as the water was pumped out of the river between the two barriers, work was begun upon the foundations of the dam. So unstable was the river-bed that the engineers had to dig forty feet deeper than they had expected, in order to get a sure foundation. Another dam to regulate the water stored up at Assuan was at the same time built at Assiout, 100 miles down the river. Here 17 steam-pumps pumped from between the temporary barriers 73,000,000 gallons of water daily, enough for a city population of 2,000,000.

BUILDING THE STRONGEST WALL IN THE WORLD



Here we see building operations on one of the islands. Twenty thousand laborers were employed upon the dam, and work went on day and night, arc lamps being used after dark. Great preparations were needed for the care of so many men, and a year was soent in building a town of huts and laying railways to the quarries.



The dam, which is the strongest wall in the world, is a mile and a quarter long and a hundred feet wide at the foundations. The height varies, but the greatest height from the foundations to the top, as originally built, is 130 feet. The south side of the dam, against which the stored water presses, is perpendicular, the north side slants, as shown, so that the dam may resist the enormous pressure of water on its other side.

WORKING IN THE BED OF THE RIVER

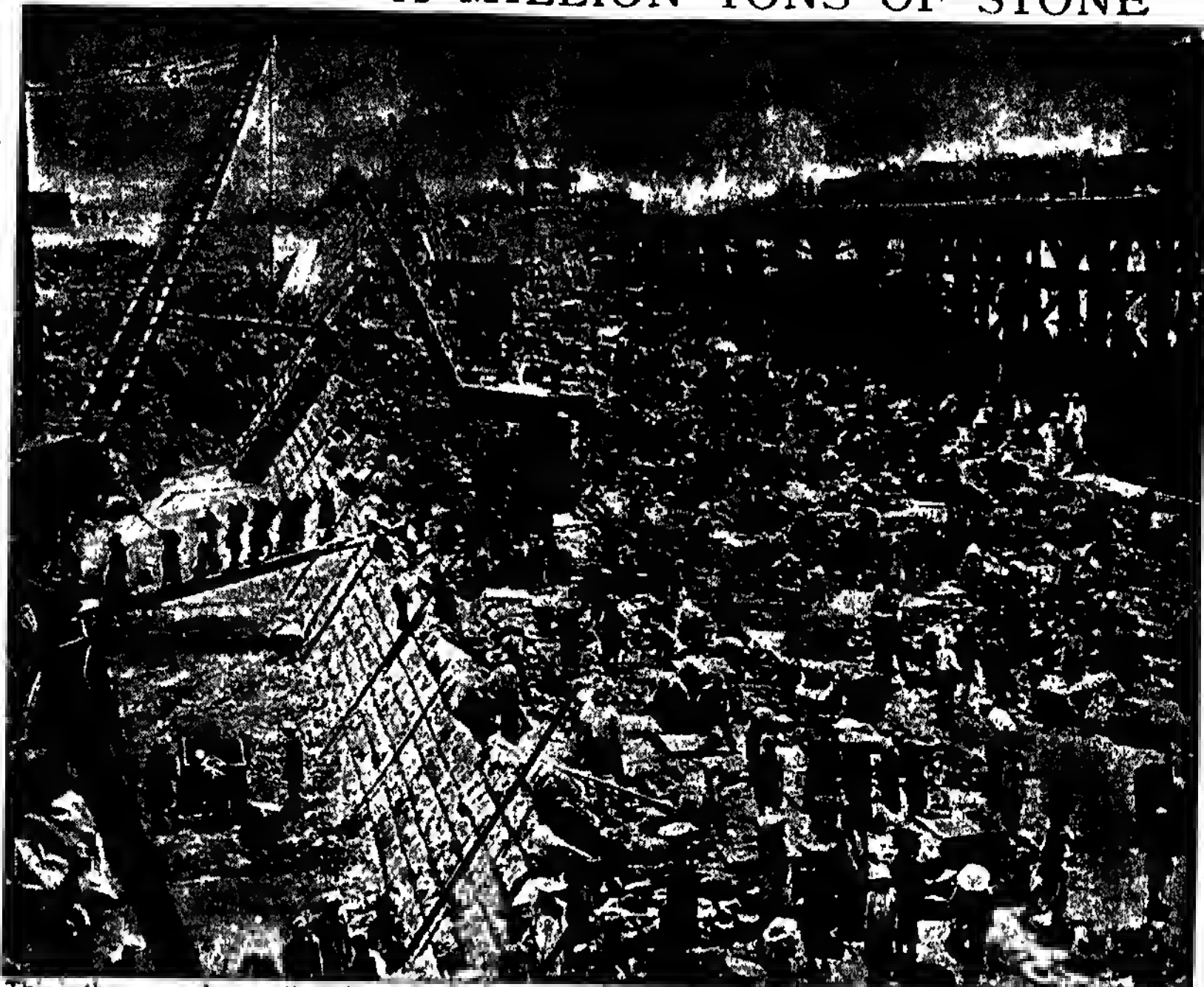


This picture shows how the laborers carried blocks of granite from the quarries to the railway. Everything possible was done for the comfort of the workers. When the Alexandria canal was built, 20,000 workmen died in the trenches, chiefly from sunstroke, but at Assuan scarcely a man died from this cause. Tents were set up at intervals, and when a man was overcome by the heat he was immediately taken to a tent and placed in an iced water bath, and a doctor was telephoned for. Telephones were fixed in all these tents.



Here we see the busy scene at the bottom of one of the channels of the river, which was kept dry by the temporary barriers and the steam-pumps. Trains from the quarries ran on to the bridge, from which the blocks of granite were lowered to the dam. It would have been impossible to build the Assuan dam in this way if the Nile had had more than one flood a year, as work was impossible during the flood.

• PILING UP A MILLION TONS OF STONE



This is the same place as that shown in the lower picture on page 5422, but this photograph was taken a few days later, and we see how rapidly the work progressed. The dam is faced on both sides with very hard granite, properly shaped, while the inside is formed of rubble, or rough blocks of different sizes and shapes.



As flood time approached, need for rapid work increased, so that the dam might be sufficiently firm to resist the waters. On the left of this picture are some of the sluices, or openings, of which the dam has 180. The huge gates that close these sluices average twenty feet in height and six and a half feet in width, and they withstand a pressure from the water of 210 tons. Yet the gates can be opened or closed quite easily.

THE GATES THAT SET FREE A WORLD OF WATER

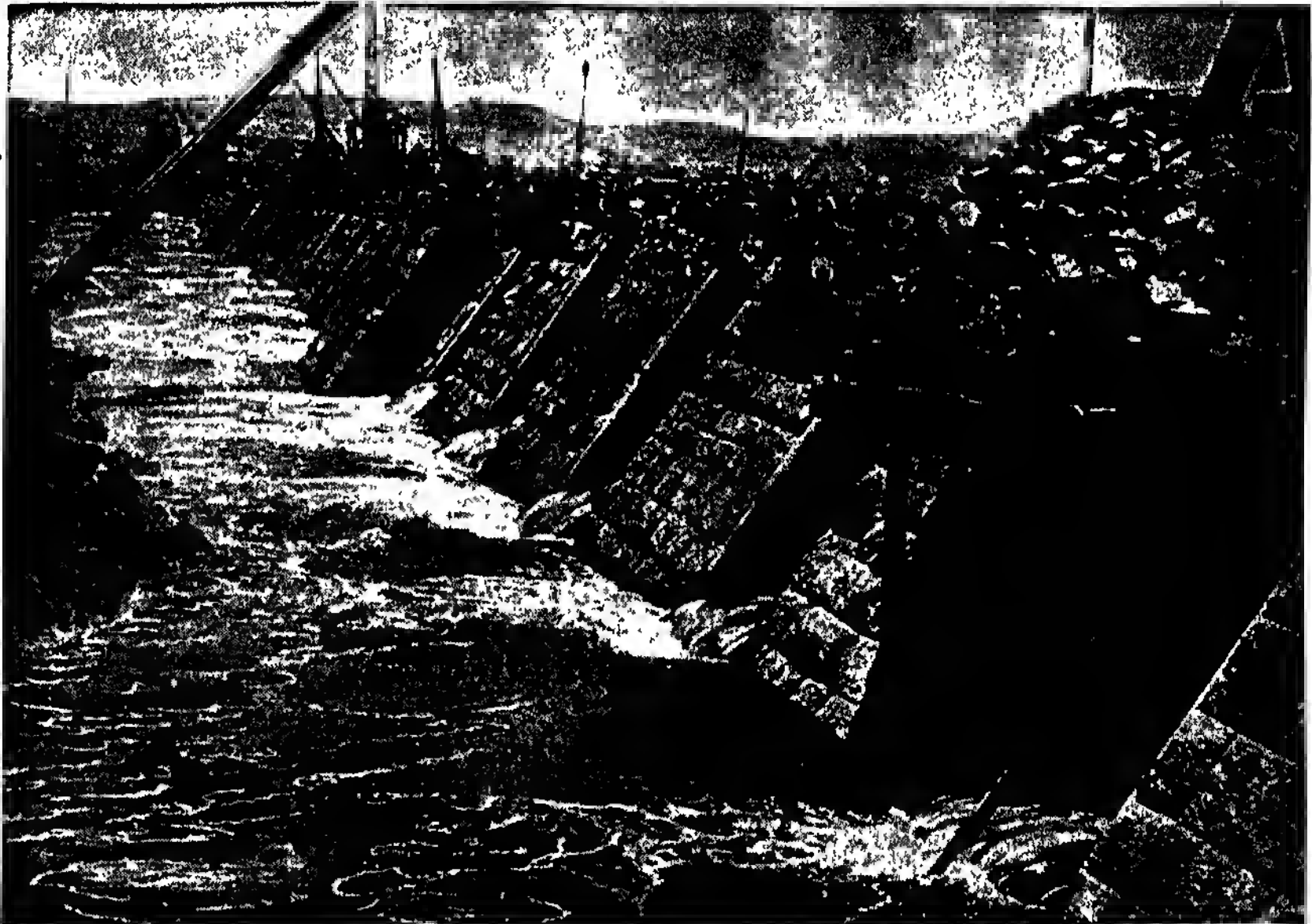


The sluices in the dam are lined with cast iron, and here we see them being built. When all the sluices are open, the total width available for the passage of water is 427 yards, which is a little less than a quarter of a mile; and the water passing at any moment is equal to twice the flow over Niagara Falls.



Once a year the melting of the snow in the Abyssinian highlands makes the Nile a rushing torrent, and by the time the river began to be in flood in 1900 the great dam was built as high as the top of the iron linings of the sluices. Then the up-stream temporary barrier was broken slightly, as shown here, and the rush of water soon swept away the barrier, which was no longer needed. The shock of water pouring through the sluices destroyed the loose bed of the river, and a granite "apron," or floor, was laid for some distance from the dam.

THE LAST WILD RUSH OF THE UNTAMED RIVER



Here we see the river rushing through the sluices after the up-stream barrier had been burst. As can be seen in the picture below, the water rose until it swept over the top of the dam, but work was continued until the water had almost reached the top. Tools and cranes were then removed, and for the last time the untamed river rushed on its mad course to the sea. By the following year the waters had been harnessed.



The unfinished dam is here seen at the mercy of the flood, which almost carried the railway lines away. The original idea for the dam was that it should be built high enough to store 2,500 million tons of water, but this would have meant the flooding of the ancient temple of Philæ for a part of the year. To save this temple, therefore, the dam was made lower, and the store of water reduced to a thousand million tons. This, however, proved to be insufficient, and now the dam has been raised to store the larger quantity.

THE MIGHTIEST RESERVOIR IN THE WORLD



When the flood subsided, work was resumed, and here we see it being completed. The Assuan dam, with the Assiout and other barrages—as the dams are also called—lower down the Nile, all a part of the great scheme, is considered one of the greatest engineering feats in history. The foundations of the Assuan dam are built into the rock, but those of the Assiout barrage rest on sand, and are kept in position by their weight.

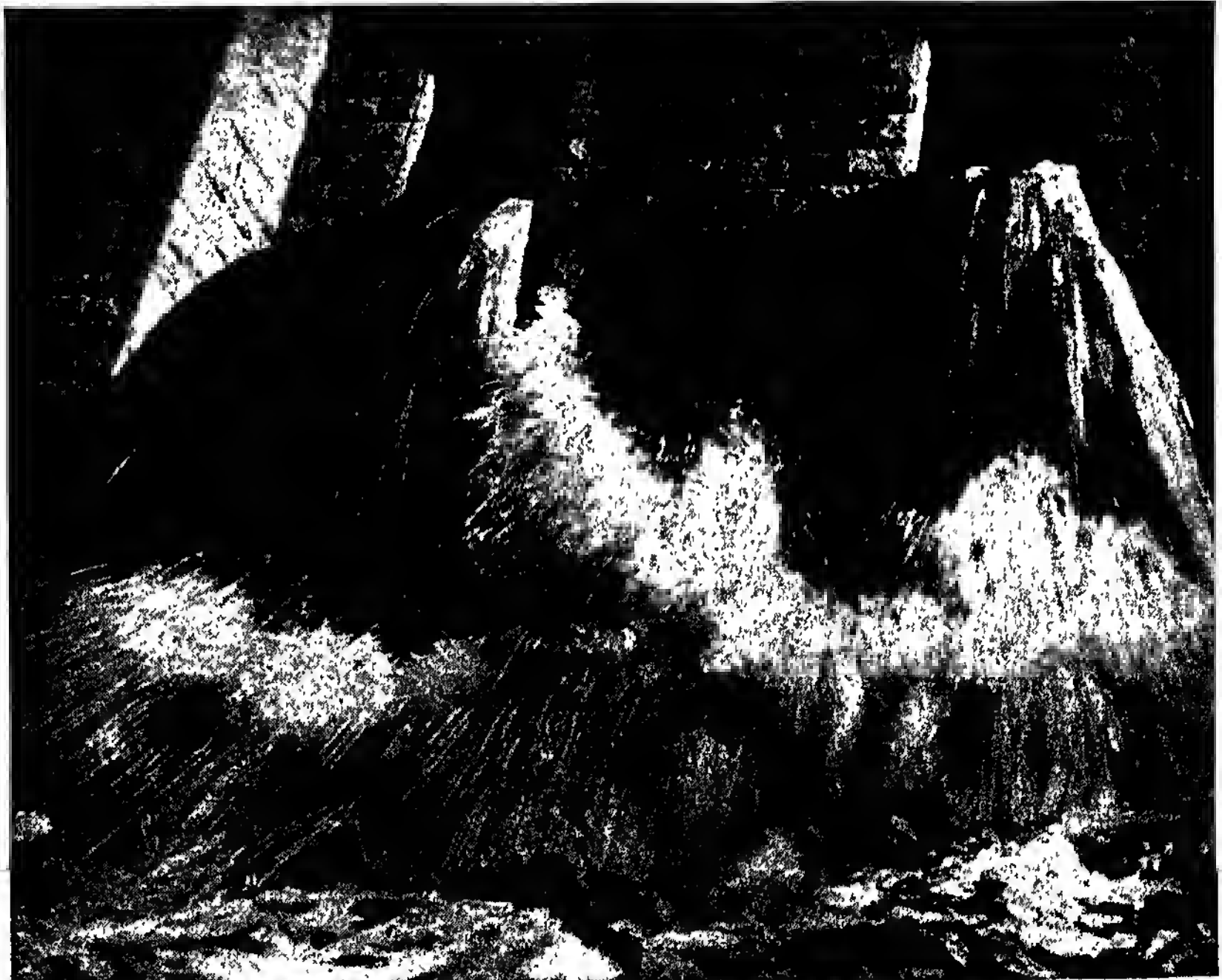


This picture shows the Assuan dam as finished in 1902. It has given to Egypt the mightiest reservoir in the world. The machinery along the top is for opening and closing the gates. When the Khedive opened the first five of these gates and let the water through, he used a key made in the shape of an ancient Egyptian amulet that was the symbol of life, because the wonderful dam that had been built meant life for Egypt.

LETTING LOOSE A MILLION TONS OF WATER



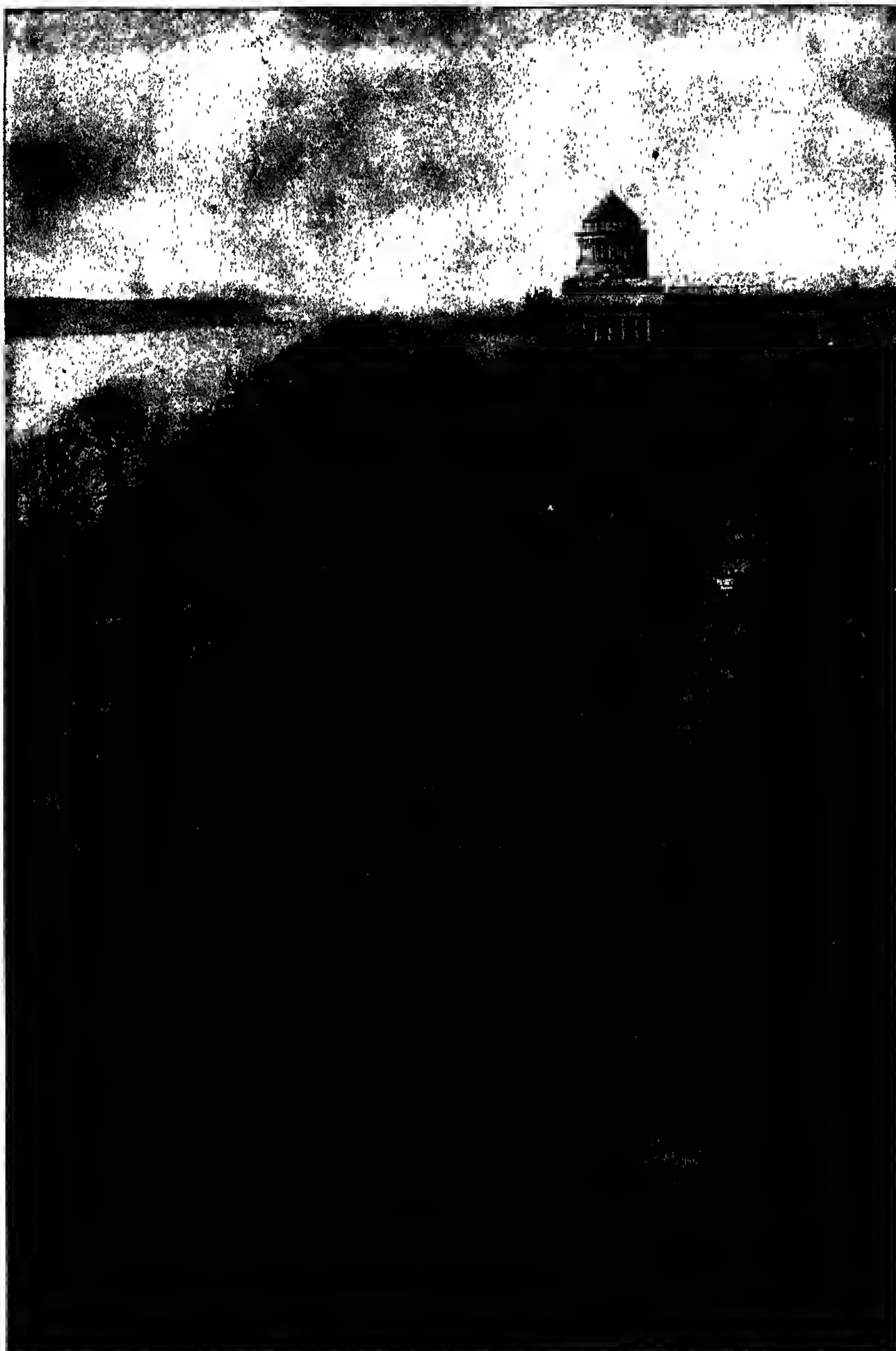
This is the south wall of the great dam that now stores up as much water as would supply several states for a year. Since the extensions have been completed, it stores up more than twice as much. Already, by means of this dam and the barrages lower down the Nile, over 400,000 acres have been watered, and have increased in value to the enormous extent of \$140,000,000. The irrigation works cost about \$30,000,000.



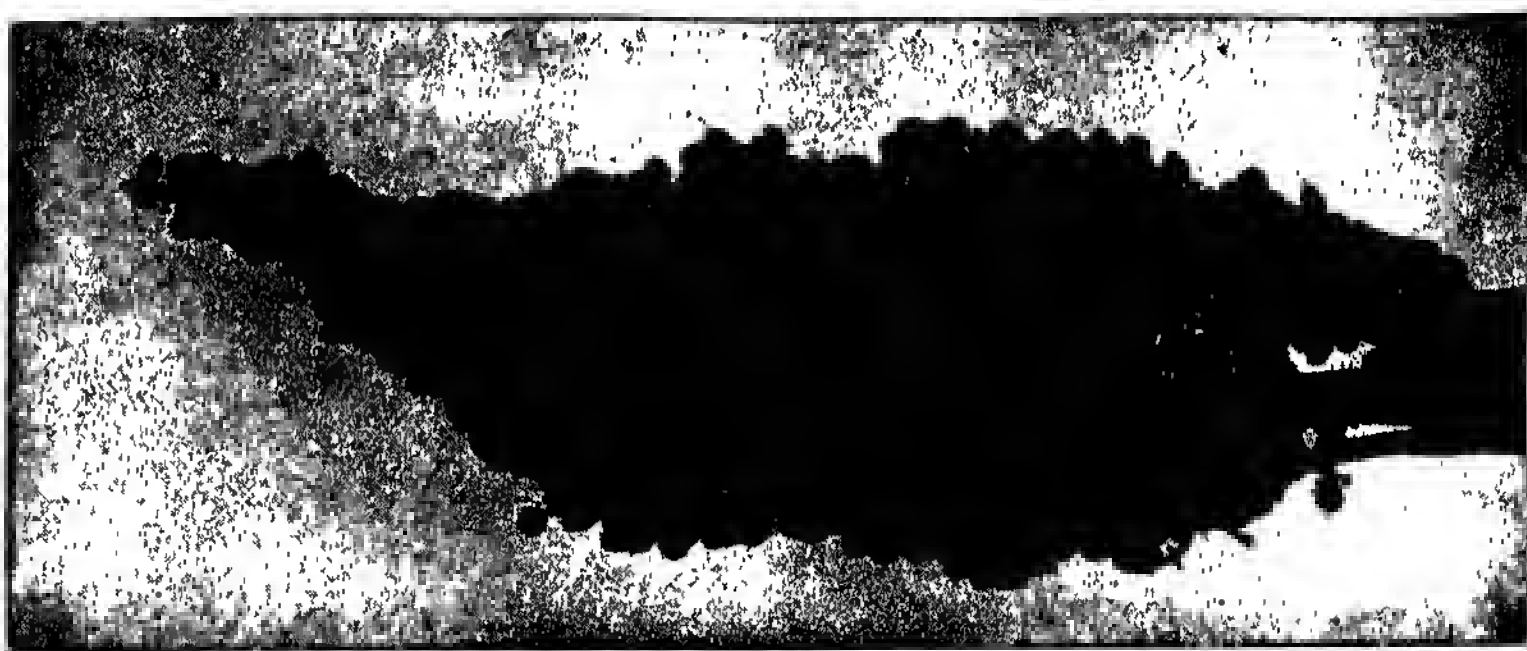
The great sluice gates, which hold back a thousand million tons of water, are opened by electricity as easily as the turning on of a light, and the torrent of water which sweeps through the openings presents a magnificent sight. More than a million tons of water rush through in twelve hours, and it is true that this wonderful torrent, controlled and regulated as it is, makes the wilderness blossom as the rose. A deep channel through the dam, for shipping, with four huge locks, keeps the river open for navigation by the largest river steamers.

THE NEXT FAMILIAR THINGS ARE ON PAGE 5527.

RIVERSIDE DRIVE AND GRANT'S TOMB



Here is a picture of Riverside Drive with its long vistas of trees, and Grant's Tomb, its white dome outlined against the sky. Beyond is the Hudson with the Palisades dim in the distance. You will notice that the Drive is divided into four roadways, two for equestrians and two for carriages. Those traveling uptown keep to one side of the Drive, and those going downtown to the other. Riverside Park, one of the most attractive parks in New York, is to the left, and runs for miles between the drive and the river.



The Fruit of the Sumac.

AMERICAN TREES IN WINTER

HOW many of us can name the trees we see in winter? Yet, if we have ever walked through leafless groves with a skilled woodcutter, we have found that he can recognize the different trees very readily. When the trees are thus crowded together he identifies them chiefly by the bark—the smooth gray bark of the beech, the deeply furrowed bark of chestnut or walnut, the silvery, or golden, or rich brown coat of the birches, and so on.

Even we can see the difference between the pale, smooth skin-like covering of a beech-bole, which always tempts us to mar it with our initials, cut deep with a penknife, and the chalky-white covering of the “silver-vested” birches, that curls back in thin sheets. If we should tear off a strip of this, we should find that it would come away like a ring, leaving a belt of fawn-colored under-bark encircling the trunk. How different both of these are from the ragged fibrous bark of the cedar, from which shreds are continually fluttering in the wind, or from the rough, somewhat scaly bark of the white pine, and the furrowed bark of the chestnut, which reminds us of lattice-work.

When we take our winter walks, it will be amusing to see how many of the commoner trees we already can

CONTINUED FROM 5345



tell by sight. The evergreens, of course, will be the easiest to know. Nearly every park has plenty of them; but we can find several others growing wild in the fields and woods.

THE ODOROUS CEDARS COVER THE CONTINENT FROM SEA TO SEA

The cedar is perhaps the most common. There are several species known by this name, but they look very much alike, and together they cover this continent from ocean to ocean. We often see young trees, with tightly crowded foliage, and shaped exactly like a paint-brush, standing in rows by fences, velvety-green where the sunshine rests upon them, but almost black in the shadows. The fragrant little leaves, like scales, are wrapped around the twigs, and on some trees, bluish berries nestle among them. These bring the pretty, gray-brown cedar-birds, with their wing-feathers tipped with something precisely like drops of scarlet sealing-wax. They whisper quietly to each other as we pass through the cedars, then return to their feasting on the resinous berries.

Other birds come to the cedars for shelter, and they carry off streamers of the fibrous red-brown bark to weave into their nests. Long, long ago the Indian, too, learned how to weave the bark into ropes and sandals, although

it is short and brittle. When the trees grow in groups, the trunks grow straight and tapering like masts, but when in fields or on the tops of sand-dunes, where the wind blows them roughly, the cedar tree becomes broad and low, and often one-sided—a tree that painters love to draw.

Its rosy wood is very fragrant, and campers delight to throw it on a bonfire so as to smell the odorous smoke. This fragrance seems to be disagreeable to moths, however, so that chests for woolen clothing are made from cedar wood. It is also the best material for cigar boxes. It is so soft and easily cut with a pen-knife, that nearly all of our pencils are made from the wood of the odorous cedar.

THE YEW TREE, FROM WHICH BOWS WERE MADE

We have all heard the story of the English yew, and how it was bent into bows that made English archers famous. It is interesting to discover that on the Pacific coast there is another yew which looks very much like that of the Old World. It has the same flattened spray with rigid leaves, and the tapering cedar-like trunk, which reminds one of a group of slender columns pressed closely together and covered with a purplish, shaggy, fibrous bark. Its wood is tough and elastic and the Indians have always used it for bows and paddles just as the Europeans did. If we find a yew tree, however, we must be careful not to chew the foliage, or to eat the seeds nestling in the bottom of a scarlet, fleshy cup, for both are likely to poison us.

THE TALL MAST-LIKE WHITE PINE

There are many kinds of pines, most of them valuable, which grow in America. We generally think of them as furnishing tar, pitch and turpentine (called naval stores), or lumber for many purposes. In fact, this was the reason why the magnificent white pines of New England were considered to be so important that Maine is called the Pine Tree State; and explains why she placed a figure of a pine on her colonial shillings and flag; and finally included a pine tree in her state coat of arms.

But only where the white pine grows in an open space, do we see it spreading in the broad pyramid-like form that we think of when we say "shaped like a pine tree." In forests it grows tall and straight,

the lower limbs being killed by shade. It may even reach the height of two hundred feet; and these giant, tapering trunks, of firm, compact wood and straight grain, were sought as masts for sailing vessels as well as for many other purposes. Nowadays, so many white pines have been cut down that the lumber is rather scarce, and pines with harder wood, or inferior woods, are used in their place.

There are five "needles," as the leaves are called, growing together in each little case or sheath. This is a point to be remembered. The cones are long and slender, with thin, narrow, shingle-like scales, that readily open. These scales (in some pines they are thick and stiff and knobbed) in all pine cones, serve as little roofs to shelter a pair of winged seeds fitted into hollows at their bases. When the seeds are ripe and the weather is warm and dry, these pent-house roofs are raised, and allow the seeds to fall out and twirl to the ground. But as soon as the weather becomes damp, the scales slowly shut down, and overlapping, or fitting close, keep the seeds from becoming wet. The scales act also as a protection or armor, to defend the seeds from the attack of animals. But they are not proof against the clever red squirrel, nor the attacks of certain birds called "cross-bills," that have bills with crossed halves, which look very queer, and as if they would be perfectly useless, but are nevertheless just right for tearing apart the pine-cones.

THE SUGAR PINE OF THE PACIFIC COAST

On the Pacific coast, we shall find another pine, quite as large as the white pine, which has a huge cone more than a foot long, but scarcely more than the width of a palm across. Out there, the Indians make up nutting-parties to get pine seeds, upon which they live, and this pine gives them some nuts. It is called sugar-pine, we are told, because it is one of the several trees with sweetish sap-wood, that is scraped off by Indians for a delicacy.

THE GRACEFUL HEMLOCKS MAKE A REFUGE FOR THE BIRDS

Our Eastern hemlocks do not seem to have tempted any one to eat them, unless partridges indulge in the tender sprays. Heretofore hemlocks furnished much of the cheap, splintery lumber used in house-building, but like every other great tree,

WHITE PINE AND BLACK WALNUT



The most magnificent eastern pine that formerly grew in great forests in northeastern America. It is being sparingly replanted, and will thrive in light sandy soil. The tree is valuable for tar, pitch, turpentine and lumber. Magnificent forests of white pine covered a large part of Maine—the Pine Tree State—and the tree was placed on the coat of arms of that state. The tall, straight trunks make the best masts for sailing vessels.



This tree, in forests, has a tall, straight trunk with deeply furrowed, dark-brown bark and heavy limbs. The nuts are nearly round, of dusky hue, with a hard shell, with shallow ridges. The tree was so common at one time that the wood was used for fences; but such wasteful methods were employed in cutting it that few fine specimens are left. The tree bears rich nuts in a very hard case, enclosed in a spongy green hull which becomes dry and hard as the nut ripens, and finally falls away.

they have been killed out; the use of the bark for tanning has helped.

A hemlock tree forms a splendid refuge for little birds as well as for the owls and vicious beasts that prey upon them. Many a ruffed grouse and rabbit has snuggled warm and dry under a low, swinging hemlock branch weighted down by snowdrifts. It is easy to tell the hemlocks. The narrow, little leaves are arranged on two sides of a twig, forming a knife-like spray, and their cones are very tiny. The tree, especially when young, is one of the most graceful of our evergreens.

Young hemlocks are likely to perch themselves on rocky ledges where they seldom get a good foothold for their roots; hence, they frequently blow over. They seem to be, also, a special mark for lightning: I have seen a little tree in half a second stripped of all its greenery and branches, while the white core, broken at the top, and still glistening with sap, protruded from the wreckage, standing piteously among its feathery, untouched neighbors.

THE FAN-PALM OF THE ARID SOUTHWESTERN SECTIONS

In the South and West, not only the cone-bearing trees, but other kinds carry their leaves over the winter. California boasts of its great fan-palm, one of the few native palms, which sometimes grows sixty feet high, and which is often used in gardens to give a tropical air. The dead and dried leaves of many years droop in a shaggy mass, like a great fringe, beneath the living crown of green fan-shaped foliage.

THE PALMETTO GIVES A TROPICAL AIR TO OUR SOUTHERN COASTS

South Carolina, on the other hand, prides itself on the palmettos, trees which stand stiff and quaint along her coast, as well as along the coasts of more southern states. Although of no great value as a timber tree, the palmetto has been closely connected with the history of the state. As every school child remembers, a Revolutionary fortification on one of the islands in Charleston's beautiful harbor was built of earth and palmetto logs. These are spongy and elastic, and when the British fleet in 1776 bombarded this fort, the logs received and embedded the balls without splitting.

The palmetto appeared on a medal and on the upper corner of the flag of South

Carolina—"the Palmetto State"—at the beginning of the Civil War, and a crooked palmetto rises in the centre of the state's present seal.

During the Civil War, the tree with a rattlesnake (apparently twenty or thirty feet long) wound about its trunk, was figured on banner and cockade, made of strips from its foliage, and on the seal of the seceding state. Oddly enough, none of these pictures shows the proper palmetto foliage, each leaf of which is shaped like an ordinary palm-leaf fan, split at the edges into slender divisions.

Strips of these leaves are woven with rushes, into baskets and various trifles. The bases of the young leaf-stalks, surrounding the solitary bud at the very tip of the trunk, are filled with long, strong fibres. This bud, containing all the growing parts of the tree, is ruthlessly cut out, killing the palmetto, in order to get the fibres, which are made into brush-bristles. The bud, itself, is cut out by Indians and negroes and boiled as a vegetable—whence the name, "cabbage palmetto."

THE EVERGREEN OR LIVE OAK OF THE SOUTH

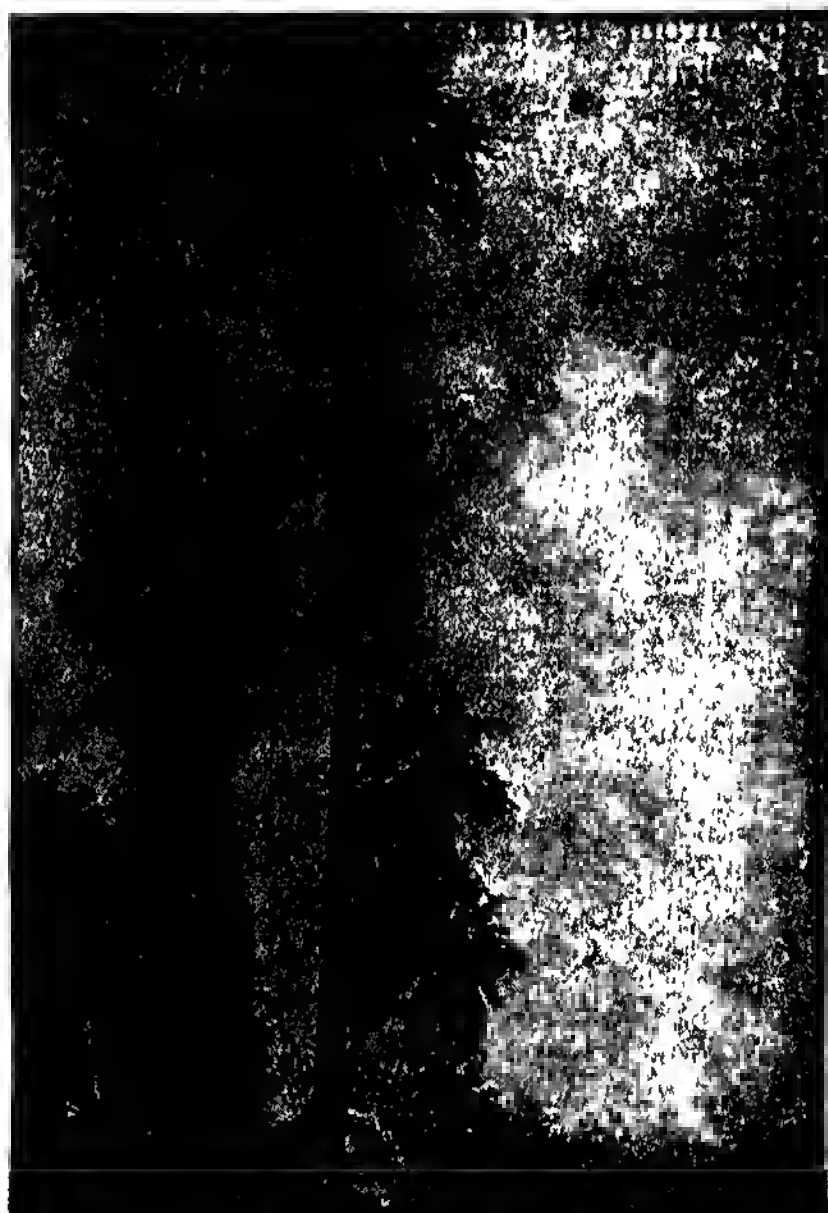
Both East and West have evergreen or "live" oaks in their southern parts. The live oak of the southeast is generally draped with quantities of Spanish moss, but that of California displays its dome-shaped head without the hoary veil. The leaves of the latter oak resemble those of holly, and remain on the tree until the new ones appear. The acorns are long and slender and are eaten by Indians, when better ones cannot be obtained.

THE BUTTONWOOD, SO CALLED FROM ITS BUTTON-LIKE FRUIT

Of all the many trees that shed their leaves in the winter, there are several that one can learn to know at a glance. Probably the buttonwood is the easiest to discover, but we must look for it along the banks of streams or in damp places, for although it grows elsewhere, the buttonwood likes to have plenty of moisture for its roots. In fact, it often grows so close to water-courses as to be undermined by them, and then tumbles in, while the great disc of roots rests edgewise on the bank. This tree can be seen afar, for great flakes of its dingy thin bark fall off, leaving curious white patches of inner bark gleaming on trunk and limbs. Countless balls of seed swing



The sugar pine is a magnificent western tree with a straight, thick trunk sometimes more than one hundred and fifty feet high. Huge cones over a foot long hang from the tips of the branches.



The Washington fan palm grows in the deserts of California, and is useful for planting in arid soil. It sends its strong roots far down into the sand in search of moisture. The top is like a feather-duster.



The sabal or cabbage palmetto gives a tropical look to the southern coast. The bases of many leaf-stalks remain on the trunk and look as though they had been braided into a thick mat.



The hornbeam forms a very pretty rounded head with beech-like leaves. Its lower limbs are somewhat irregular in growth. The seeds are sheltered by a three-lobed bract in catkin-like clusters.

gaily from its clumsy branches through the winter. Towards spring they are broken up, being composed of little nuts, each with a tuft of rusty wool, and the birds help to tear them apart. In the Mississippi Valley the buttonwoods (or sycamores, as they are often called) grow to a great size, but are then often decayed within, only a mere shell of their wood and bark surviving. Early settlers utilized these vast hollow trunks, sometimes ten feet across, for smokehouses, grain-bins and the like, and even constructed shelters for themselves, by cutting great pieces of the thin walls of the cavity.

THE HORNBEAM, OR IRON WOOD

Not far from the sycamore, we may find the small shapely hornbeam or iron wood. Both of these names refer to the extremely white and surprisingly hard wood contained in the slender furrowed trunk. So tough is it, that home-made brooms could be fabricated out of fine strips of iron wood. A "withe will last almost as long as iron wire, and an ox-gad . . . is nearly equal to a leather one."

The flexible branches of the European hornbeam, which closely resembles ours, were woven together to make those curious walled and roofed alleys of old-time gardens. Blue beech it is sometimes called, from its blue-gray bark smoothly stretched over its hard-looking, irregular trunk and limbs, and from the similarity of its foliage and round head to the larger tree.

THE RICH CRIMSON BERRIES OF THE SUMACS

We shall doubtless see some sumacs when we are tramping across barren fields. There is nothing easier to distinguish on account of the cone-shaped masses of berries, each covered with crimson plush, which hold their own bravely during the winter.

In another article, we have spoken of the poison-sumac with its poisonous, dry white berries hanging like grapes. While all are closely related, it is to be remembered that any sumac with velvety, red fruit is safe to handle. In fact, one may taste the red plush berries, which are very acid, and not agreeable. Chickadees love them, and revolve about the spires until they gradually swallow all the seeds. In winter, we see why the staghorn is so called. Its thick, awk-

ward, extremely brittle branches have a curve upwards not unlike a deer's horn.

THE SHAGBARK HICKORY, FAMOUS FOR ITS NUTS

Probably the shagbark, that tall, handsome hickory which farmers often leave standing in their pastures on account of the sweet-flavored nuts it bears, will be an upland tree that we shall soon espy. If it is a full-sized tree, it will have a rather small and narrow head with a few crooked branches, bristling with smaller ones, pointing more or less upward. The trunk is generally tall, straight and slender, and it looks as if it had been shingled rather badly. Long narrow strips of its gray bark have become loosened at the sides and lower end and are attached only at the top, whence they hang like flaps or "shag." The hickory is famous not only for its seed-kernels, but for its strong, durable wood, which also makes splendid fire wood.

THE SASSAFRAS, KNOWN FOR ITS PUNGENT BARK

In searching for the shagbark, let us not confuse with it the quaint sassafras. It is also rather tall and straight but has a peculiar crown. The branches look as though they had started to grow to the right, then to the left, then swing back, and so on. The branchlets grow stiffly and crookedly upward, giving an oblong, round-topped outline which curiously reminds one of a many-branched candlestick. The lower bark is deeply furrowed, gray and corky-looking, but the upper and smaller branches are smooth and yellowish-green.

The sassafras is one of the trees that grow smaller and smaller as they go northward. In New England it is almost a shrub. But it is extremely difficult to get rid of, for the merest fragment of root will start growing. These aromatic, warm-tasting, orange-skinned roots are the most valuable part of the sassafras. Probably the colonists learned to include them in root-beer by discovering that the Indians before them had made a drink out of sassafras.

THE WALNUT—A HANDSOME TREE, WITH FINE DARK WOOD

At one time there were many black walnut trees scattered throughout our timbered lands, especially in the great forests of the Middle West. They were so common, and the wood was so readily split, that people made fence-rails out of

FOUR INTERESTING TREES



The shagbark is one of the most valuable hickories, both as a timber tree and for fuel. It is sparingly cultivated for its pleasant flavored, thin-shelled nuts.



The sassafras is a quaint little tree of small value for timber. It is aromatic in bark, leaf and root, and is used for root-beer, sassafras tea, and other purposes.

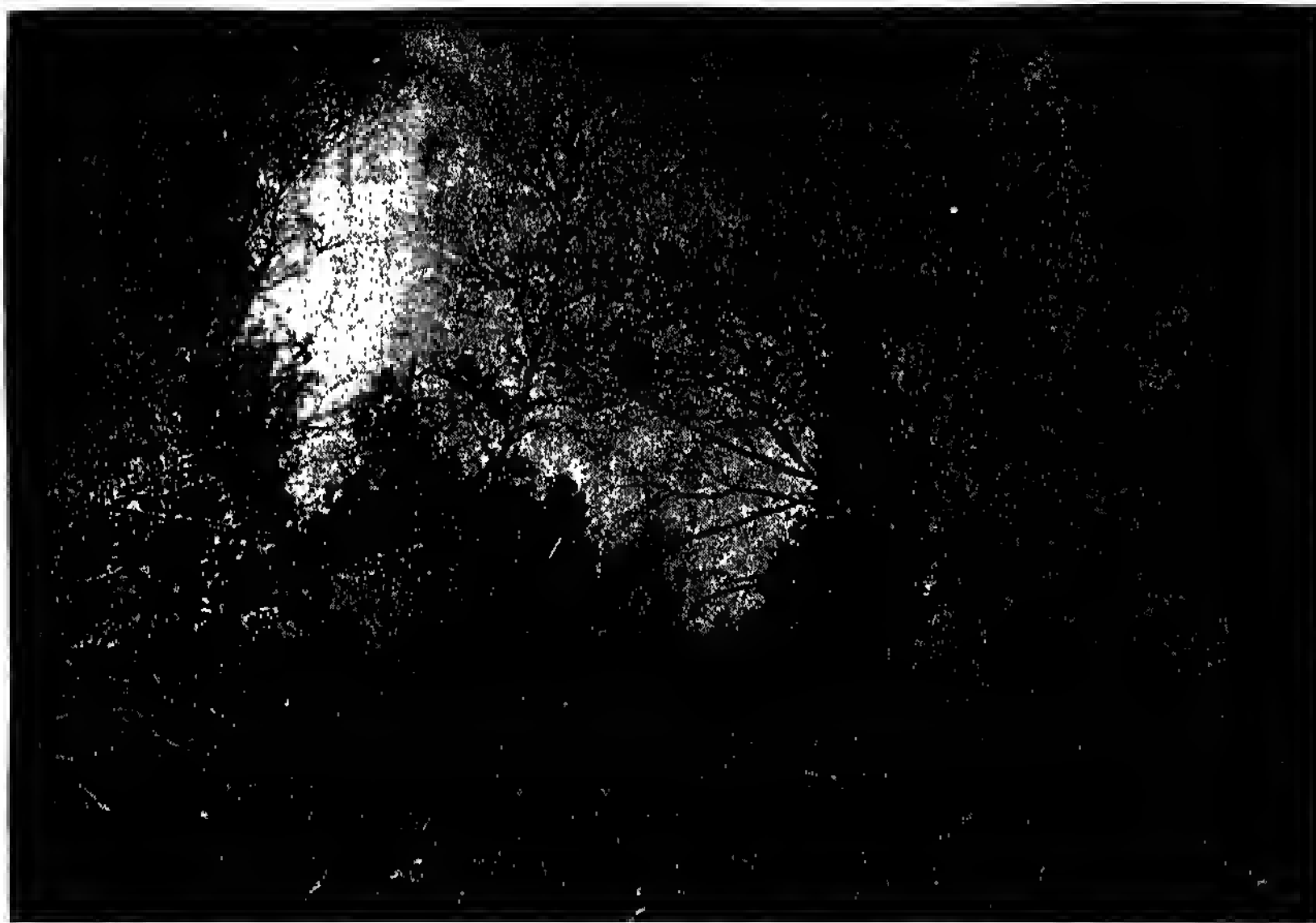


Mesquites spread into wide low domes of finely-divided foliage. This species is known as ceshaw in the West Indies, where it is scattered over dry plains with the spine-girdled palm (*acrocornia*).



There is an astonishing amount of the hard, heavy wood of the mahogany used in tropical America for furniture, and otherwise. Its beauty varies with its grain, and the color of the stain used.

THE BEAUTY OF THE TREES IN WINTER



Birches are frequently planted in parks for the sake of their beauty. Their lovely delicate spray is justly appreciated in winter, especially in the weeping varieties, where the twigs are elongated. Some of the American birches grow to a height of seventy feet or over, and the hard wood is valuable for a variety of purposes. The Indians make canoes and articles for household use from the bark of the paper birch.



Hemlocks usually grow on cool rocky hillsides, and sometimes have so slight a foothold that they blow over in tempests. They seem to attract lightning.



The cedar is one of the most picturesque of our evergreens. Its wood is used for pencils and cigar boxes. It was a sacred tree to many Indian tribes.

TWO TREES OF PARK AND STREET



The catalpa is a splendid tree when in flower. The white, purple-spotted corollas are borne in great panicles. The flowers are followed by long green bean-like pods. The leaves are broadly heart-shaped. The wood is fine and smooth, and is used in cabinet work where wood of a light weight is required. The tree is often planted in parks and on city streets, where its handsome flowers make a brave show in July.



This great tree, the buttonwood, or sycamore, as it is often called, is sometimes planted, like its European relative, in city streets, where it apparently thrives. In its native woods, the buttonwood sometimes grows to a height of over a hundred feet and usually alongside of streams, into which it frequently falls, blocking the current. A picture of the European plane tree, or sycamore, is shown on page 3536.

them, saving one or two trees somewhere, perhaps, for the sake of the rich nuts. Then there was a call for black walnut as a material for cabinet-work and furniture. Its rich-brown, hard and firm wood can be readily polished and is light as well. But the demand for it, and the wasteful ways of the early settlers, caused the larger trees to be entirely destroyed, and we seldom see fine specimens unless they have been saved near houses, or in an occasional pasture. Then we shall find that it becomes a noble tree with broad, rounded head, supported by a straight trunk, and wide-spreading heavy limbs, somewhat awkward in their manner of branching. The lack of delicate spray, and the odd, horn-like arrangement of the stubby branchlets, give the black walnut, when leafless, an unfinished, gaunt look, which, with the dark-brown furrowed bark, will help to tell us what it is.

THE SPLENDID HEAD OF THE MAJESTIC WHITE OAK

The white oak at first glance might be confused with a field grown black walnut, for it also has a splendid dome-like head. But it branches more regularly, is straighter, and is subdivided into smaller twigs. Its immense lower limbs stretch far out, level with the ground and not far above it. It is apt to have many faded leaves clinging to the twigs throughout the winter. They are oval in shape with regularly and deeply indented edges. The bark is rough and pale, and the wood is also light-colored, tough and elastic. One should always be able to tell the white oak either in winter or summer, for it is one of the most valuable of our trees, not only on account of its majestic form, but for its timber.

THE CATALPA'S BEAUTIFUL FLOWERS

A wild-wood tree, that we shall scarcely find growing north of Philadelphia except in cultivation, is the catalpa, or Indian bean, as the settlers in the South called it, having an idea that the slender cylindrical pods looked like snap-beans, and being in the habit of calling any native object "Indian" this or that, whether the actual Indian had anything to do with it or not. Certainly no Indian had any interest in the "beans" of the catalpa, for they contain nothing but rows and rows of winged seeds overlapping one another and forming a central

rod in the leathery shell. But the pencil-like pods swinging from the twigs all over this ungainly tree, with its short trunk and wide spreading, not to say sprawling, branches promptly give us a clue to its name.

THE BEAUTY OF THE BEECH AND THE BIRCHES

The catalpas lack that delicate feathering of small twigs that we call "spray," but this is the chief feature of the elm, the beech and the birches. The beech's twigs grow smaller and finer as they approach the ends of the branches and are finished by the long, sharp leaf buds; but the birches have the most exquisite "spray" of any of our trees, except perhaps that of the American elm. In fact, winter is the best time to see the birches, for then the delicate twigs, too fragile, it would seem, to stand the stormy weather, but really so flexible as to bend before it and thus escape danger, stand out clearly against sky and snow. And, when spring comes, and the yellow-powdered tassels are trembling on the spray, how they are tossed and flung about by the elastic branches, thus scattering the fertile powder to be carried on the wings of the wind. If the birches had no value as timber-trees, or oil producers, or bark-furnishers, for the many uses of the Indians, they would still be of inestimable value as ornamental trees for their spray alone.

Other trees may be recognized in winter by their sprays. Of course the evergreens can always be studied at this time, but trees which lose their leaves can also be named, such as the pepperidge, with its shelf-like branches closely set with tiny branchlets, which bristle in every direction. Then there is the hackberry, with its fine spray rather like that of an elm but dotted with numerous small, round, dried fruits. Birds eat the thin, sweet flesh. The dogwood, too, may be known in a moment by its up-turned twigs, topped by gray, squarish buds like buttons. Color in the woods appears when the sprays of willow and maples are painted with pale-green and gold and rose tints, which proclaim the coming of spring. Certain shrubby dogwoods also wear the spring's livery, but children know best the black and gold of the willow-wands, on which crouch silky pussies under their shell-like tents. The children bring great bunches home.

THE NEXT NATURE STORY IS ON PAGE 5505.

The Book of OUR OWN LIFE

WHAT THIS STORY TELLS US

NOT so very long ago, all people thought that alcohol was a good thing at all times. If a special effort were to be made, it was thought that the best preparation for it was to take a dose of alcohol. But we know now that it is not good. Alcohol does not feed the nerves and strengthen the muscles. It only stimulates them, and if a great deal of alcohol is taken, or in some cases even a little, the stimulation is carried to such a degree that self-control is lost. The effect of alcohol upon a developing brain is as bad as it can be, and no young person who hopes to make a name in the world should touch it in any form. Happily the world is commencing to see that it can do without it.

ALCOHOL, THE ENEMY OF LIFE

ALCOHOL, the product of the fermentation of sugar by the yeast plant, forms part of the daily diet of many people, and is consumed in this country in enormous quantities. In various parts of the world, and very notably in our own country, large areas of land are devoted to crops that yield a quantity of sugar, or of starch that can be readily turned into sugar, for the production of alcohol.

In this country, we have been spending more than \$1,000,000,000 a year on alcoholic drinks. And this large sum is not spent in building up the bodies of men and women and growing children. It is worse than lost, for the effect of alcohol upon the nation, and especially upon the youth of the nation, is such that if we threw the money into the sea every year, we would be a thousand times better off. As it is, we buy with it poverty, and crime, and cruelty to children, disease, insanity and death, all of them in rich abundance. Wealth is either life, or what serves life; *illth* is what injures life. And men take our essential wealth—the land, the sunshine, the water, the air, and good useful food stuffs like grapes and barley—and turn it into these dreadful things.

But all this, we shall study later. Meanwhile, remember that what we spend on drink would buy us a hundred battleships every year, to defend our coasts.

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CONTINUED FROM 5306



It is true of every living creature, without exception, that poisons are more injurious to it when it is young than when it is grown up, because when it is growing it is developing. There is a great difference between growth and the miracle of development, and development may be stopped while growth goes on. Alcohol will do this, for alcohol is a poison, and there is no form of life that it cannot destroy, if it is used in sufficient quantities.

Not even tuberculosis, one of the most deadly of diseases, causes so many deaths as alcohol. Tuberculosis is what is called "catching," for it is due to microbes which spread from one person to another. It used to be thought that children did not suffer from it, but now we know they do. There is, in this country, a terrible amount of tuberculosis among little children. Fortunately, however, we do not always catch diseases, even when their microbes enter our bodies. The microbes are the seed, but our bodies are the soil, and the seed cannot grow if the soil be unsuitable.

ALCOHOL HELPS TO SPREAD TUBERCULOSIS

Breathing foul air seems to make the soil ready for tuberculosis. That, of course, is why we sleep with our windows open. But there is another thing which makes the soil much more ready for the growth of this deadly seed; and that is alcohol. Ignorant

people believe that alcohol opposes tuberculosis, but this is not true. It has been proved that there is much more tuberculosis where the quantity of alcohol drunk is large, than where it is small. A district which consumes about three times as much alcohol as another district, has more than three times the death rate from tuberculosis.

Now it has been generally supposed that children do not get alcohol to drink in this country; that even those who go into saloons very rarely get any alcohol given to them. But we are learning that this is not the case, and that the state of things here is not so very different from that which has been known for some time in Europe. There is a law against the sale of alcohol to children; but unhappily foolish parents often let their children drink it, not knowing that it is poison to them.

In Germany and Austria the most serious alarm has been caused by the discovery that not merely women—which means mothers—but also children take far more alcohol than used to be supposed. Of the total number of school children in Vienna, one in three drinks beer regularly, one in twenty drinks wine, and one in thirty drinks spirits. In a large German town a government doctor, studying more than four thousand children, found that 71 per cent. drank beer or wine daily. In a class of seventy-one children between seven and nine years of age, twenty-one had drunk brandy.

MILLIONS OF SCHOOL CHILDREN ARE ALLOWED TO DRINK ALCOHOL

Some years ago careful inquiries were made in England to see whether the same thing was to be found there. It was found that in several schools in London, over 40 per cent. of the children in the primary grades drank alcohol more or less regularly. As far as the inquiry showed, it was probable that at that time there were many thousands of child drinkers in London alone and that perhaps two million school children in England and Wales drank alcohol more or less regularly. Since then, however, strong efforts have been made to teach parents the harm that they were doing their children in giving them wine, beer, or any other form of alcohol to drink.

It is perhaps not to be wondered at that some parents are still ignorant of the harm that alcohol may cause. It is

not very many years since doctors themselves began to realize it. Not very long ago it was generally believed that alcohol had strengthening powers. But the great scientists have taught us that this is not the case, and we now know the truth of the matter.

There is a very clear rule about alcohol, and other substances like it, in the way they act upon the body. It is, first, that the younger and the further from its grown-up state the creature is, the more it is affected by the poison. That, of course, we can understand. The earlier the period of development, the more serious is a wrong step; the further, so to speak, the creature will go out of its right way.

THE BRAIN MORE WONDERFUL THAN ANYTHING ELSE IN THE UNIVERSE

The second point is that alcohol and other substances like it affect the body, whether developing or already grown up, in a certain precise order. Our bodies are made up of many parts, some of which we may look upon as older than others, and those which are older we must also look upon as lower. The backbone, for instance, is very old, for we know it is as old as the fishes; parts of the brain are very old, but we can trace in the brain, quite clearly, newer parts which are higher in their duties and more easily upset. There is, indeed, a part of the brain which is often called the new brain. It is by far the most wonderful thing in the whole universe, so far as we know it. Now the point is that the newest and highest parts of the brain are also the most delicate. They are the most likely to be injured by anything when we are grown up, and if anything interferes with the development of a growing child, these parts are the most certain to suffer. The same is true of injury done by old age or by disease; *the last to come is the first to go.*

"Last to come" has a double meaning, because it applies both to the race to which we belong, and to ourselves as individuals. The parts and powers of the brain that develop last in ourselves, as we grow up, are those that have developed last in the history of the great line to which we belong.

THE GREAT LAW THAT THE LAST TO COME IS THE FIRST TO GO

The rule is that when the individual is damaged in development, or is poi-

soned by anything that acts at all upon the brain, or grows old and begins to go downhill, as we say, that which last came is the first to go. On the other hand, the very oldest part of the brain, such as the part by which we breathe, is the least delicate. It is the first to come and the last to go. Every other part of a man's brain may have been practically destroyed, and he may be quite unconscious from a huge dose of alcohol, but the part of his brain which makes him breathe will hold on to the last; until, perhaps, the alcohol poisons even that, and then he dies.

This law about the different levels of the brain ought to be known by every intelligent person in the world, because it is the greatest discovery ever made in this branch of science. It was made by an Englishman, Dr. Hughlings Jackson, who died only a few years ago.

Alcohol perfectly illustrates Jackson's law in every part of it. When young children are exposed to the effects of alcohol, their development is interfered with most in its highest parts. That is the terrible thing about alcohol, and other substances like it, that they strike at us where we are most human, and interfere less with the least human parts of us. There are some hundreds of thousands of persons in America to-day, of all ages, whose brains and minds have not properly developed. The most moderate figure is about a quarter of a million, but we know that that is far under the real facts. The lives of these persons are worth nothing to themselves and much less than nothing to us.

THE CELLS OF OUR BRAINS THAT CAN NEVER BE REPAIRED

We, of course, have to pay for their keep, and for all sorts of terrible evils, like crime, and drunkenness, and cruelty to children, which flow from the existence of these people. They all illustrate the truth of Jackson's law. The highest, the latest, the most delicate, the most human part of their brains has been injured, but they breathe as well as we do. No power on earth can repair this injury. It is one of the most remarkable facts about the brain, or, indeed, about nerve-cells anywhere, that once destroyed they are destroyed forever. No new nerve-cells can be made beyond those with which we are born, and no damaged nerve-cell ever recovers. Now, alcohol

is very largely responsible for the making, and for the existence, of these unfortunate children and grown-up people; and all of them are so many terrible illustrations of Jackson's law.

Jackson's law applies in just the same way to cases where people of any age take a large enough dose of alcohol to affect their brains. They may do themselves no permanent harm, but while the brain is under the influence of alcohol we find that the last to come is the first to be affected, and to be the most affected. Now, it is very interesting for us to ask ourselves what it is in our brains and minds that is the very highest and latest thing.

THE POWER OF SELF-CONTROL MAKES MAN HIGHER THAN THE ANIMALS

What is it that a child learns last and finds most difficult to learn? What is it that some grown-up people have never learned? What is it that makes the difference between the highest type of man whom we can trust always, and always be sure of, and other people of whom we cannot be so sure? It is not the power to move one's body, certainly, nor is it the power to see and hear, nor yet the power to speak. It is not even the power to think, though people are apt to suppose so until they look into the matter. It is *self-control*. In creatures other than man there is almost no self-control. We may watch them at a zoological garden, year in, year out, and we shall find no signs of it. If we train one of the most intelligent of all animals, such as the dog, it is only fair to say that we find the beginnings of self-control there; but that, of course, is with man's help. The greatest thing in us—apart from love, which is greater in one sense—is the power to say "No;" the power not to yield to this, or that, or the other, because of some consideration which we have in our minds, and which we regard as of higher importance.

Now, it is the mark of savages—by which we mean real savages, not highly educated and cultured people like Indians and Chinese, whose ancestors were civilized thousands of years before ours were—that they have very little self-control. They act quickly, impulsively, as we say. The highest part of the brain is not so well developed in savages as it is in us. In children, self-control is not an easy thing.

WHY CHILDREN CRY AND GROWN-UP PEOPLE DO NOT

When a child is hurt, it cries. Older people may be hurt just as much, but usually they do not cry. The brain has learned how to control the tears. In the same way children will laugh more readily than grown-up people, and often they find it very difficult to keep from laughing at times when it is not at all polite to other people to do so. Now, lack of self-control is the most certain and constant mark of defective-minded people of all kinds, and it is the first and most certain mark of poisoning by alcohol, and other things of that class, that they strike at the most human thing in us; the last to come and the first to go. People who could keep their temper without alcohol lose their temper under its influence; they start laughing or crying, and cannot stop, at things which would not have made them either laugh or cry when they were all right; they do rash things when any one puts the idea into their heads; they lose their caution and their judgment; they say things that they would not usually have said. We commonly suppose that the first effects of alcohol are when the muscles of a man's body are affected. But that is a great mistake. The first effect of poisons of this kind is shown upon the highest parts of the brain, which have nothing to do directly with any muscles. The muscles are directly controlled by the lower part of the brain.

HOW ALCOHOL SPOILS THE HIGHEST POWERS OF MAN

It is only later that the levels of the brain which work the muscles are affected, and always the law of Jackson holds good, and these parts of the brain are affected less than the parts above them. The latest and most delicate movements are affected first. The most human movements, so to speak, are those of the thumb, and these are injured very quickly, as the writing shows, or any kind of delicate movement in which the thumb is concerned. Then the delicate movements of speech are affected, and next the delicate movements by which the two eyes work together. Under the influence of alcohol they work separately, so that the person sees double. Afterwards, the coarser movements, such as those of walking, are affected; but, as we have already learned, the movements of breathing remain to the last.

HOW ALCOHOL DEADENS THE SENSE OF RIGHT AND WRONG

People who drink alcohol lose the sense of right and wrong. They tell long stories about things that never happened, and exaggerate so that you never know when they are speaking the truth. At first this loss of the moral sense is hardly noticeable, but gradually it increases until at last all sense of responsibility and duty is swept away. "The cries of cold and hungry children make no impression on a brain dazed with alcohol, and no emotion of affection or desire to protect is aroused by the cry of a suffering child." Indeed, men under the influence of liquor will often strike or cruelly beat their own little ones. It is a fact well known to workers among the poor that the greatest barrier to their efforts to uplift the people is alcohol. It deadens all higher thought and kills the desire to become neat and cleanly and healthful.

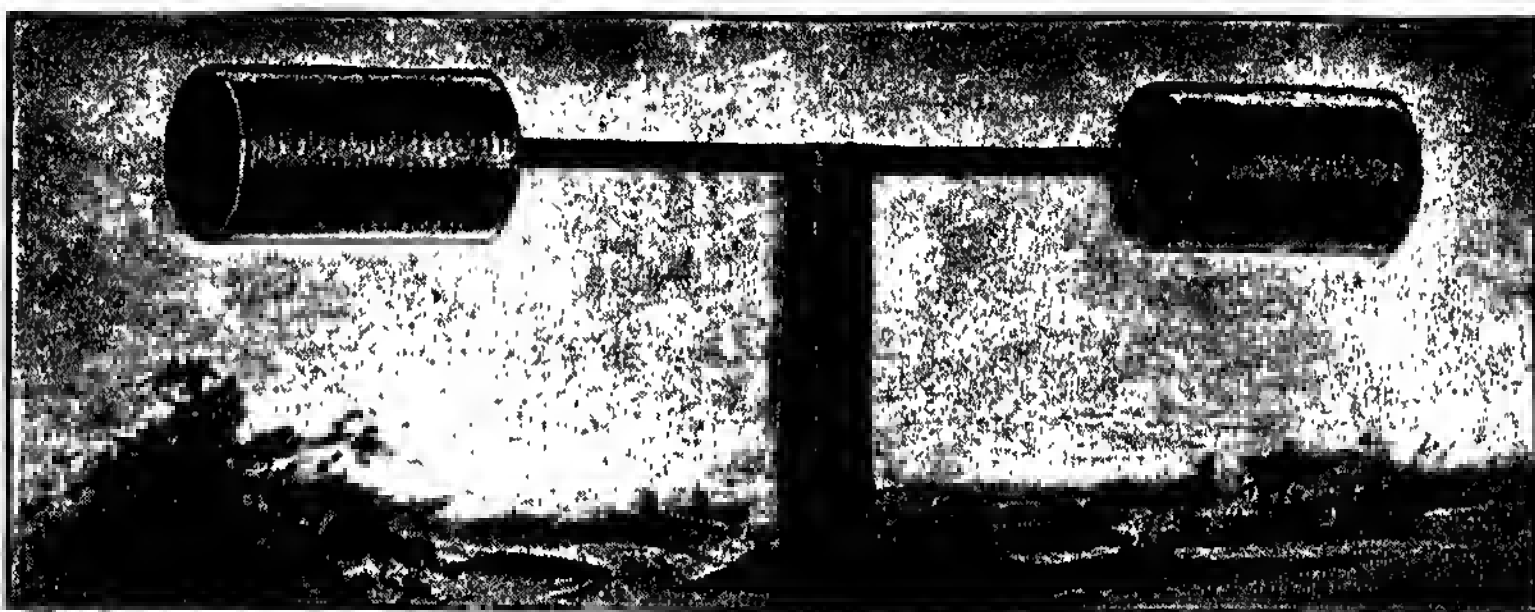
DESTROYING ONE'S OWN LIFE AS AN EFFECT OF ALCOHOL

Alcohol has the most depressing effect upon the brain. The short period of brightness and excitement produced by it soon passes away and is usually followed by a long fit of the "blues." While the body is trying to come back to its normal condition, people sometimes take their own lives in what is termed a spell of temporary insanity. It is the opinion of one doctor that alcohol is to blame for many tragic deaths among young men and women. It is reported that out of two hundred and twenty attempts at suicide, three-fourths of the number were more or less under the influence of liquor.

So long as the effect of the alcohol is in the system, people look at life from an unnatural point of view. They are subject to jealousy, to fits of rage, and usually very quarrelsome. As a consequence, they do all sorts of foolish and wrong things and may even commit crimes from which, when not under its influence, they would shrink with horror.

None of this is very pleasant reading if we think of it as what happens every day to thousands of persons. But just now we must look at it from the point of view of the wonderful history and building of our brains, and of the law of Dr. Jackson, which teaches how the history of the brain tells in its behavior when anything injures it.

THE NEXT STORY OF OUR OWN LIFE IS ON PAGE 5621.



The home-made barometer as it appears when completed and erected for use in the garden.

A BAROMETER MADE AT HOME

THERE is a barometer of an entirely different kind from those that most of us know, that works very well, costs little for material, and can be made by any careful and persevering boy.

First of all take two sheets of stout white paper of good quality, stiff in texture, and of any convenient size. A good size would be twenty inches by thirty inches. Now let us roll up each sheet into a cylinder, and glue the edges in position, so that we have two tubes, or pipes. We next cut out, or ask a carpenter to make for us, four round pieces of wood exactly the right size to fit in at the ends of the cylinders. If there is any difficulty about getting round pieces of wood we may cut these drumheads out of thick cardboard; but let us remember that the cardboard must be very thick indeed. The boards, or drumheads, being quite ready, we fix these in the four ends of the cylinders, and glue the paper to the edges of the boards, so that they are perfectly airtight. There must not be the least opening anywhere for the air to pass.

We now take a pole of any suitable length, an ordinary blind-rod is very suitable for the purpose, and with glue fasten a cylinder to each end, as seen in the picture on this page. We should be careful to see that the pole is fixed exactly in the centre of the round end of each drum, or cylinder.

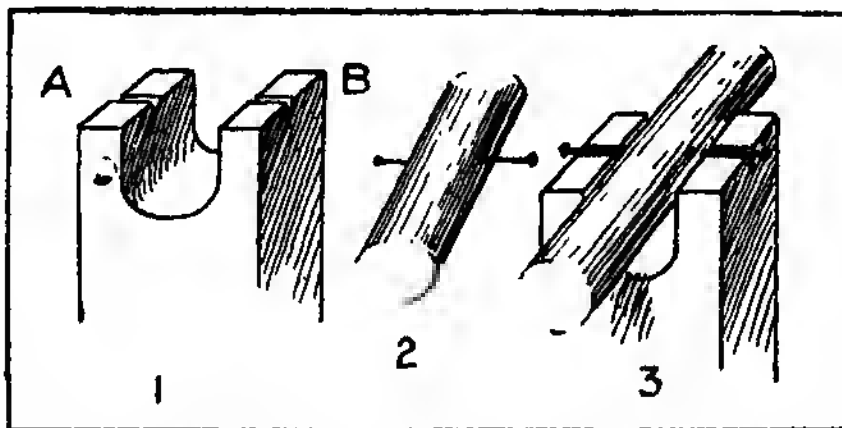
Now let us decide where we are going to fix our home-made barometer. It is best to put it in some position sheltered from the rain, though open to the air—under a veranda outside the house, or under the roof of an open shed. Having selected the

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spot, we erect a post of any suitable height—four or five feet would do admirably, although

the height is not a matter of the least importance. Dig a hole, and insert the post so that it is perfectly upright. Then fill in the hole and press down the earth all round. The next thing we have to do is to shape out a groove in the top of the post, as seen in the first diagram. We can do this with a keyhole saw, and can then smooth the groove with emery-paper. At the places marked A and B in diagram 1 we cut two little grooves crosswise, and polish these very smooth.

The groove at the top of the post is for



1. The grooves at top of the post. 2. Nails in the poles for balancing. 3. How the pole balances on the post.

the pole with the drums to work in. We take the pole, and on each side drive in a pin, these pins being for use as pivots to work in the small grooves A and B. We move the pins until we get them so that the pole will balance on top of the post with the two drums, or cylinders, exactly level. Then we replace the pins with smooth strong French nails, as shown in diagram 2. The pole balances on the post, as in diagram 3. To make our barometer indicate the weather, we bore a hole in one of the wooden ends of one cylinder only. This establishes communication between the outside air and that in the cylinder, while the air in the other cylinder is that which was enclosed in it, and is cut off from outside air. If the outside air is heavier than that in the closed cylinder, the cylinder with the hole will go down, and this indicates fine weather; while if the surrounding air is lighter than in the closed cylinder, the cylinder with the hole will rise, and this foretells wet weather.

THE GAME OF MAKING RHYMES

A VERY good pastime for boys and girls, and for grown-ups, too, as they sit round the table on a wet evening, is to make up two-line rhymes, each taking it in turn to give to the others the word they are to use at the end of the first line, and for which they must find another rhyming word at the end of the second line. It is easy to make up a two-line rhyme, if the word given has many other words rhyming with it. For instance, with the word *then* some such couplet as this may be made :

A little nonsense now and then
Is relished by the wisest men.

The great idea in this game of making rhymes, however, is, when our turn to give a word comes, to pick one that has no rhyme.

There are many such words in the English language, and here are some of them : Alb, breadth, bulb, chimney, coif, depth, doth, eighth, fifth, film, fugue, gulf, hemp, lounge, mouth, mourned, ninth, oblige, orange, of, pint, polka, pork, porringer, prestige, puss, sauce, scarf, silver, sixth, spoil, sylph, tenth, twelfth, plagued, warmth, wasp, wharves, widow, width, window, with, wolf, wolves.

When it is someone else's turn to give a word to which we must find a rhyme, and they give a word like one of these, it is worth knowing that the difficulty may sometimes be overcome by ingenuity. For instance, orange and month have been used in this way :

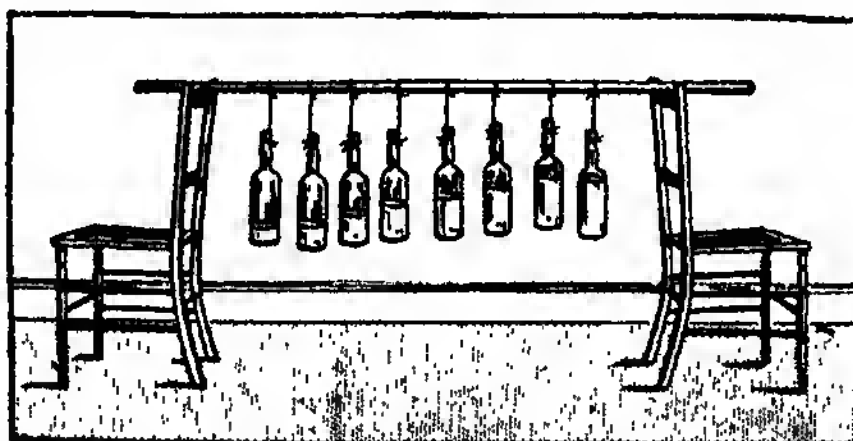
From the Indus to the Bloreng
Came the rajah in a month,
Eating now and then an orange,
Conning all the day his Grunth.

The Bloreng is a hill near Abergavenny, and the Grunth is the sacred book of the Sikhs. Here are two other attempts with month.

"You can't," says Tom to lipping Will,
"Find any rhyme for month."
"A great mithtake," was Will's reply ;
"I'll find a rhyme at wunth."

A MUSICAL INSTRUMENT FROM OLD BOTTLES

AN amusing and clever musical instrument may be made from a number of old bottles, such as we buy lime-juice or vinegar in. Even medicine bottles will do, but the bottles should be all the same size. Having collected our bottles, we take an ordinary broomstick and rest this on the backs of two chairs as shown in the picture. Then we tie the bottles to this stick, so that they hang loosely and not too close together. Now comes the work of tuning up, and this we may do by pouring water into the bottles, a different quantity into each, putting more water for a low note and less for a high. To get the note of each, we tap it with a stick—the edge of a boxwood rule is a very good thing for this purpose. With patience and perseverance and a little ordinary care and skill, we shall at last have our



MUSICAL BELLS MADE FROM OLD BOTTLES

How many weeks in a month ?
Four, as the swift moon runn'th.

Another rhyme to orange is the following :

I gave my darling child a lemon,
That lately grew its fragrant stem on ;
And next, to give her pleasure more range,
I offered her a juicy orange.
And nuts, she cracked them in a door-
hinge.

Porringer is a difficult word to rhyme, but the difficulty has been met in these ways :

The Second James a daughter had,
Too fine to lick a porringer ;
He sought her out a noble lad,
And gave the Prince of Orange her.

When the nations doubt our power to fight,
We smile at every foreign jeer,
And with untroubled appetite
Still empty plate and porringer.

Portugal is not an easy word, but :

There was a young lady of Portugal
Whose turn was decidedly nautical !

A rhyme can sometimes be made by splitting a word at the end of a line, as in the following example, which gives a rhyme to polka :

Our Christmas tree produced a doll ca-
Parisoned to dance a polka.

Window and widow have been rhymed.

Bold Robin Hood, that archer good,
Shot down fat buck and thin doe,
Rough storms withstood in thick greenwood,
Nor cared for door or window.

Since of this suit I now am rid oh !
Ne'er again I'll lodge with a widow.

When difficult words are given for rhyming, it always causes surprise and adds greatly to the interest of the pastime if we can overcome the difficulty in some ingenious way like those given.

bottles all tuned and ready for use, and we can now play the curious instrument by striking the bottles with the edge of the rule. Of course the bottles need to be strong, or the striking would break them, but we need not

strike very hard. It will be found that simple tunes can be played on the bottle-bells, and after some practice we can take two sticks and thus play quicker tunes. It is, of course, essential that the bottles should be hung at such a distance that they do not knock against each other when struck with

a rule or stick. Much fun can be obtained from this home-made instrument, which should only be used out of doors, in case the bottles break and the water runs out on the ground, although there is no need, if care be exercised, to have any such accident.

A DAINY AFTERNOON TEA-CLOTH

UNTIL we have tried it, we can have no idea what a pretty afternoon tea-cloth can be made of four linen handkerchiefs joined together by strips of lace. Nothing could be simpler, or easier to make, and we shall find that this is the best way to set about the work. Buy four plain linen hemstitched pocket-handkerchiefs of equal size, and lay them side by side, in two rows, to form a square, leaving a space of about $1\frac{1}{2}$ inches between them, to be filled in by lace insertion, as shown in picture 2.

We must measure carefully the quantity required, because the size of handkerchiefs varies considerably. The insertion should be joined to the handkerchiefs by means of *whipping*, or tiny over-and-over stitches, which, in case we have forgotten, are worked as shown in picture 1. We lay the edge of the insertion against the edge of the handkerchief, working the two together in this way, but being careful not to pull the stitches too tight. They should be just tight enough to hold them together. The next thing to be done is to sew on all

round the cloth a frill of lace to match the pattern of the insertion, which adds in no slight degree to the general effect of the cloth.

CUTTING AN APPLE INSIDE WITHOUT PEELING IT

TO cut the inside of an apple in half without cutting the peel may seem impossible, but it is not really so; and if we follow these directions we shall be able to perform this puzzling feat. Take a good, crisp, sound apple of moderate size, and a needle with thin but strong thread, such as is found in any home. Now insert the needle at the point A, and push it through the apple to the point B, pulling a good length of thread through, but leaving 10 or 12 inches hanging out at A. Now insert the needle again at B, and push through to C, drawing the thread well through; then thread from C to D, and so on right round the apple and back to A, forming in the course a decagon, as shown in the picture. We now have the two ends of the thread hanging out at A, and if we pull these gently but firmly downwards we shall, with the thread that forms the decagon, round the inside of the apple, be able to cut the inside of the apple clean in two without injuring the peel. The thread is, of course, pulled right out at the bottom, A.

This feat is capable of considerable development. Having cut the apple in half in the manner indicated, we can again thread the

This lace should be whipped up and then joined to the cloth. We must make a tiny hem of the rough edge of the lace, whip it, and draw up the cotton until we have got the lace to the right fullness, remembering that if it is too full the effect is not pretty. The gathered frill should be joined to the cloth, just in the same way as we joined the insertion. It is

important, of course, that the lace should be put on quite evenly, and the only way to be sure of doing this is to divide the length into four parts, which should be marked with pins, and, later, when the whipping is done, should be pinned to the four corners of the cloth.

The insertion will need to be carefully joined to the lace where the two meet, at the places marked A A in picture 2. To make it quite firm, the insertion should be finished off with a tiny hem, to which the lace can be afterwards sewn. If something more elaborate is wanted, little embroidered handkerchiefs could be used instead of the plainer ones shown in the picture. Plain linen

handkerchiefs cost about 20c. each, and the embroidered ones a few cents more; while for the lace we can pay almost any price we choose.

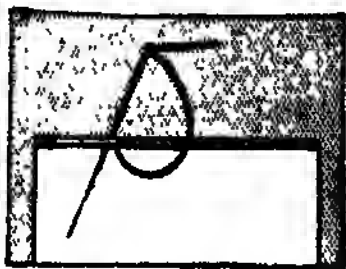
apple all round in another direction, and cut it into quarters, and then in still another direction, dividing it into smaller pieces.

Much fun is to be had from this feat, for we may give a friend an apple thus divided, with the request that he will peel it for us. It is very amusing to watch the expression on his face when, after peeling the apple, he finds

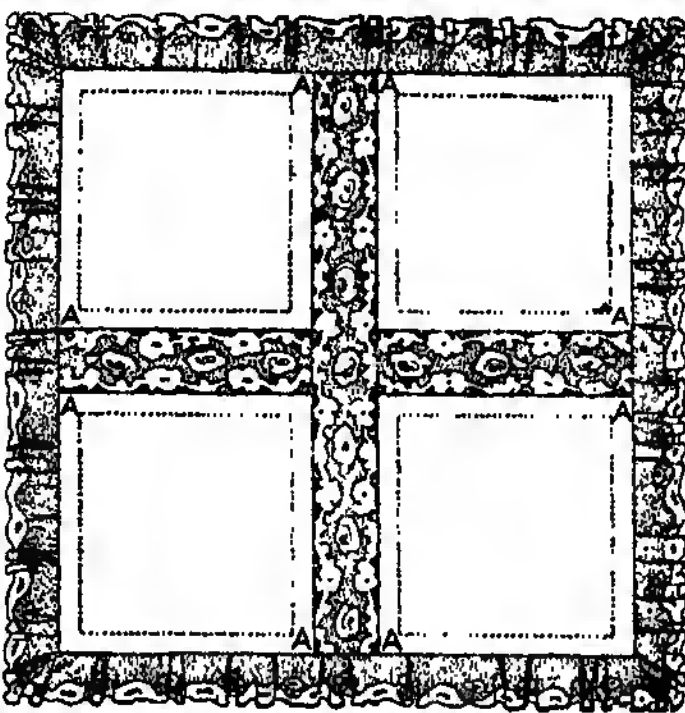
that the inside is cut up. Any boy can perform this feat after a little practice, but we must be careful to choose a sound apple, and also a strong thread that will not break when we pull the ends to cut the apple. Of course, a very thick thread should not be used, or the places where the needle is inserted would be too conspicuous. On the other hand, with a thin thread of sufficient strength, the holes made by the needle and thread need not be visible, or, at any rate, not visible

except upon a very careful examination.

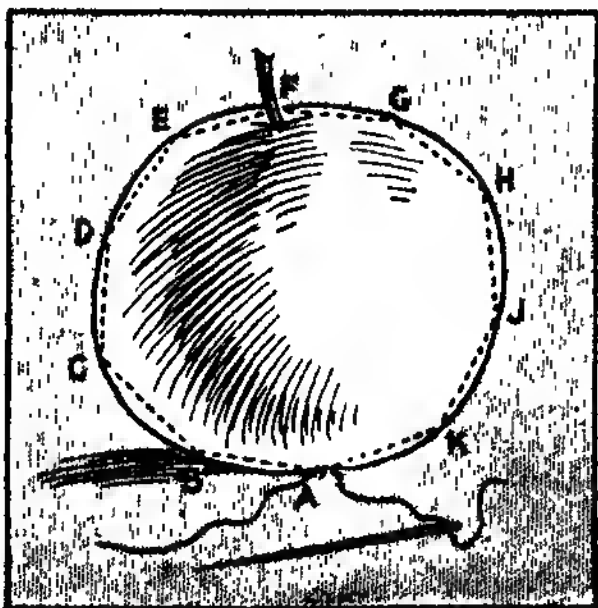
We should not choose a large apple until we have had considerable practice with those of smaller size, as the larger the apple the more difficult it is to pull the thread through without breaking it and without making a rather ragged mark at the bottom of the apple.



1. The whipping stitch.



2. The handkerchief tea-cloth.



HOW TO CUT THE APPLE

A CARD THAT HELPS US TO MAKE DESIGNS

ON this page we see a square with a black line running from each corner towards the centre, and contained in this square are four designs—one a circle, another shaped something like a leaf, the third is like a ?, and the fourth is a double curve, something like a printed S flattened out nearly straight. In addition to these four figures there are eight stars dotted about at intervals. From this simple square we can make a great number of

different designs, some of which are very complicated. We must take an exact tracing of this square, and cut out a similar design in cardboard.

This will save us from spoiling our book. Having cut out the square in cardboard, we place it upon a sheet of white paper, and run a pin through the black dot in the centre of a little star—any star will do. We must be very particular to see that the pin holds firmly, otherwise our design will be spoiled. We shall now begin to make our design, using, let us say, the circle.

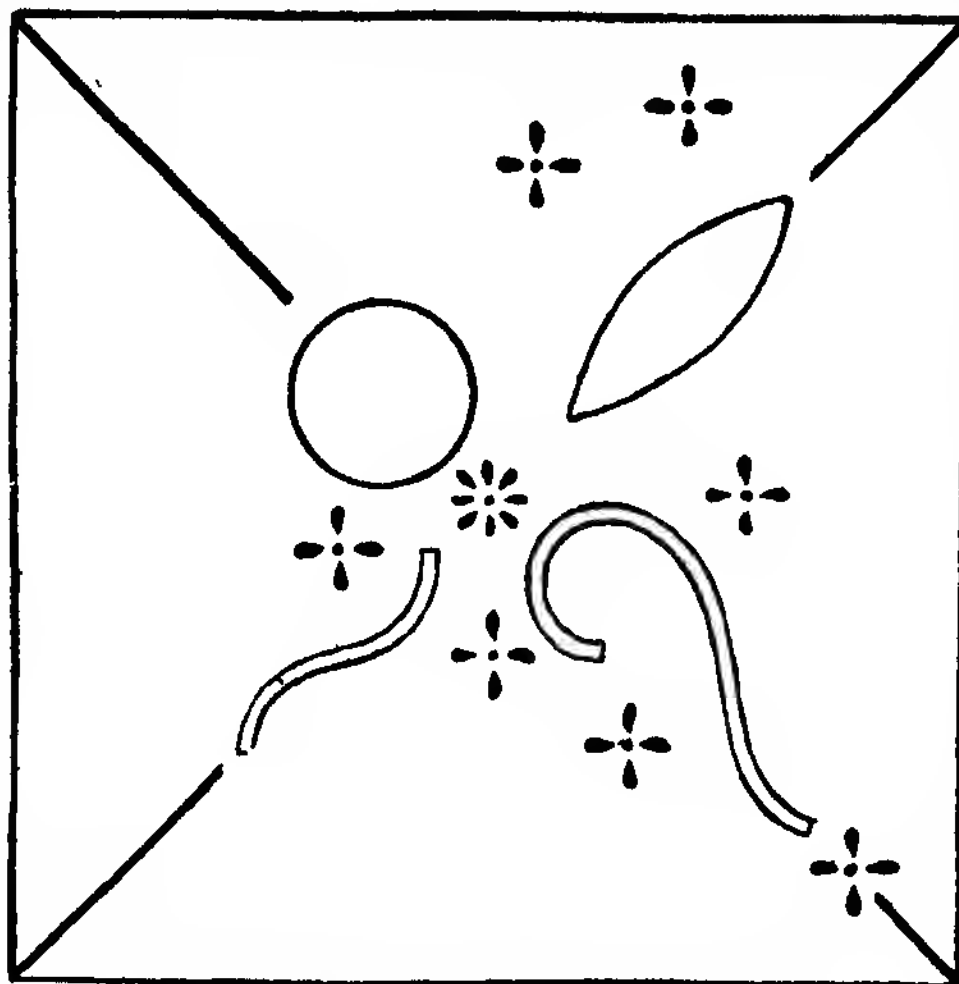
We take a soft lead pencil that has been sharpened to a nice point, and make a mark on the white paper opposite the corner of the square, the line from which points to the circle.

Now we take our pencil, and, beginning on the edge of the circle nearest the centre of the square, we draw round and round the circle continuously again and again, but as we are drawing we keep on gradually and slowly shifting the square card round a little to the right.

rate at which we move the square card round as we are drawing the circles. If we want the lines very close we must shift the square slowly, and if we prefer them wide apart we must move the square quickly.

The important thing is to see that we move the square at the same pace throughout. If this be not done, we shall get an irregular design instead of the neat and regular design we expect. When we have practised with the circle we

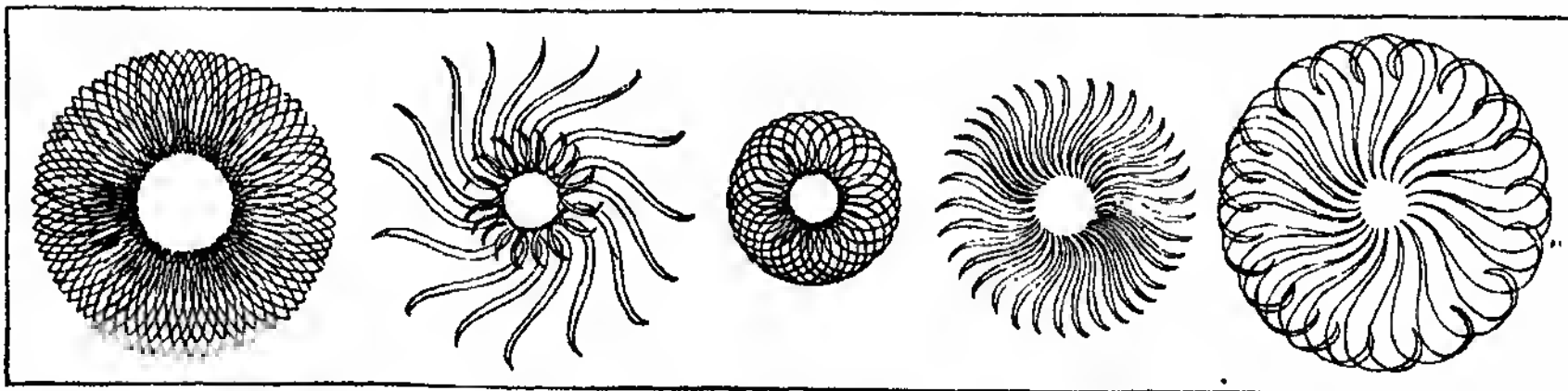
might try the leaf design, drawing our pencil round and round as we did in the circle. In making designs from the other two figures the pencil must be run continuously from one end of the figure to the other, backwards and forwards, along the whole length of the curve or slit. On this page we see a few of the simpler designs, but when we become more expert we can use two, or even more, of the figures in making one design, thereby getting very beautiful and intricate patterns. The designs will be of different



THE GEOMETRICAL DRAWING CARD

sizes, according to which star it is that we place the pin through as a centre.

There are several things we must not overlook. To begin with, we should always make the pencil-mark opposite one corner of the square, so that we know exactly when the card has been right round on the pin. If this is omitted, we shall probably overrun the starting-point, and spoil the design. Much, too, depends upon the pin remaining upright and immovable, for if it shifts we shall spoil the



SOME OF THE DESIGNS THAT CAN BE MADE WITH THE GEOMETRICAL DRAWING CARD

We keep on drawing round and round the circle, and at the same time moving the card slowly and evenly round at the same pace until the corner comes back to the spot from which it started. If we now remove the card, we shall find on the paper a circular design similar to the middle one shown in the set of designs in the second picture. Whether the lines are close or wide apart depends upon the

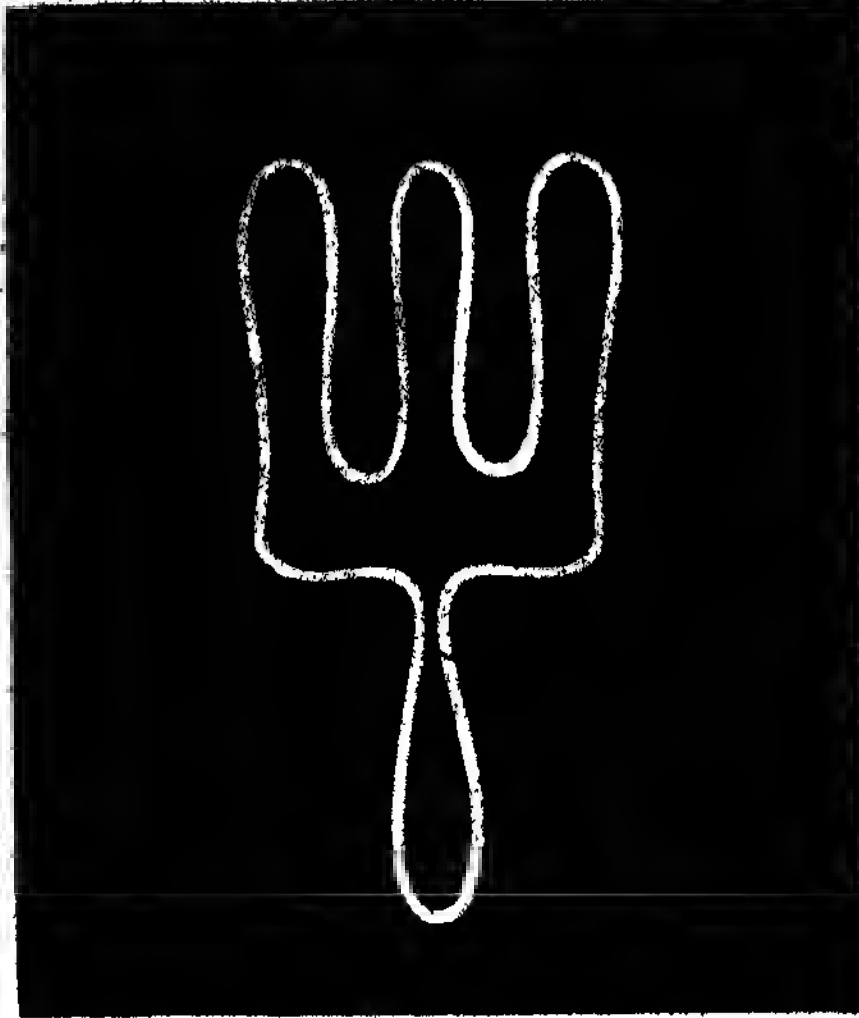
regularity of the pattern. Above all, we must remember that the whole beauty of the picture we are making depends upon the uniform rate at which we move the square and the pencil while drawing.

The designs shown in the second picture are only a few of the beautiful patterns that can be made with this little device, but they show the possibilities of the geometrical drawing card.

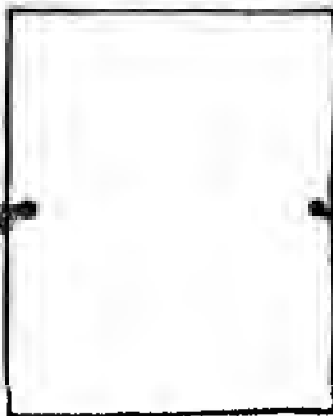
MAKING SPINNING PICTURES

ANY boy or girl can easily make for himself or herself a series of pictures from which a good deal of entertainment can be derived. Cut out a piece of cardboard the exact size

a piece of thin string or a piece of thread as seen in the small picture in the middle of the page. That picture, of course, does not represent the size of the card, but only the

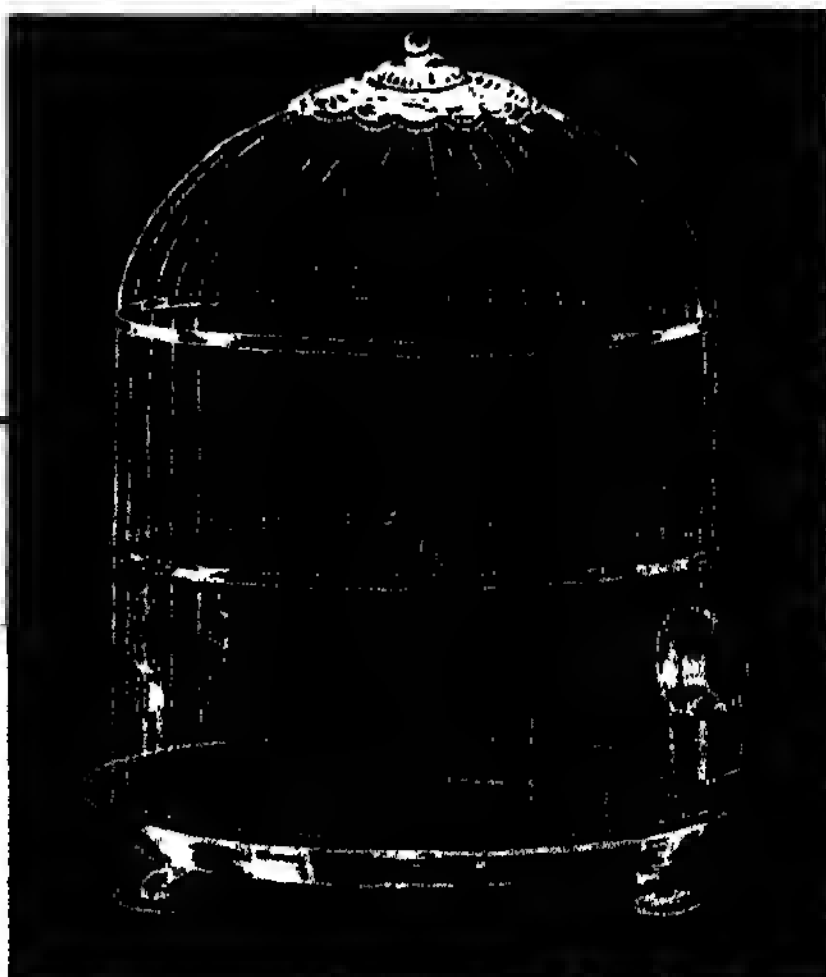


of one of the black pictures on this page. Upon one side of it trace the fish seen in the top picture on the left, keeping it in the exact position on the card as shown in the picture and making all the rest of the card black; on the back of the card trace the grill shown exactly as it is in the top picture on the right side. Now make two pinholes in the card, and fix to each side of the picture



method of fixing the string or thread. Then twirl the string between the fingers and thumbs and the card will spin round rapidly, making the two pictures blend into one so that the fish will seem to be lying on the grill.

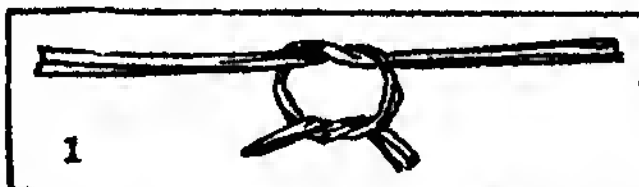
The lower pair of pictures, showing the parrot and the cage, can be made in the same way. When the card is spun, the parrot will seem to be inside the cage.



MAKING A BASKET OF RAFFIA WORK

RAFFIA is another name for bass, which we use in the garden for tying up plants. It hangs in a familiar yellow bunch in the greenhouse, and we all know it quite well. Here we are going to learn how to make a basket-bag with it.

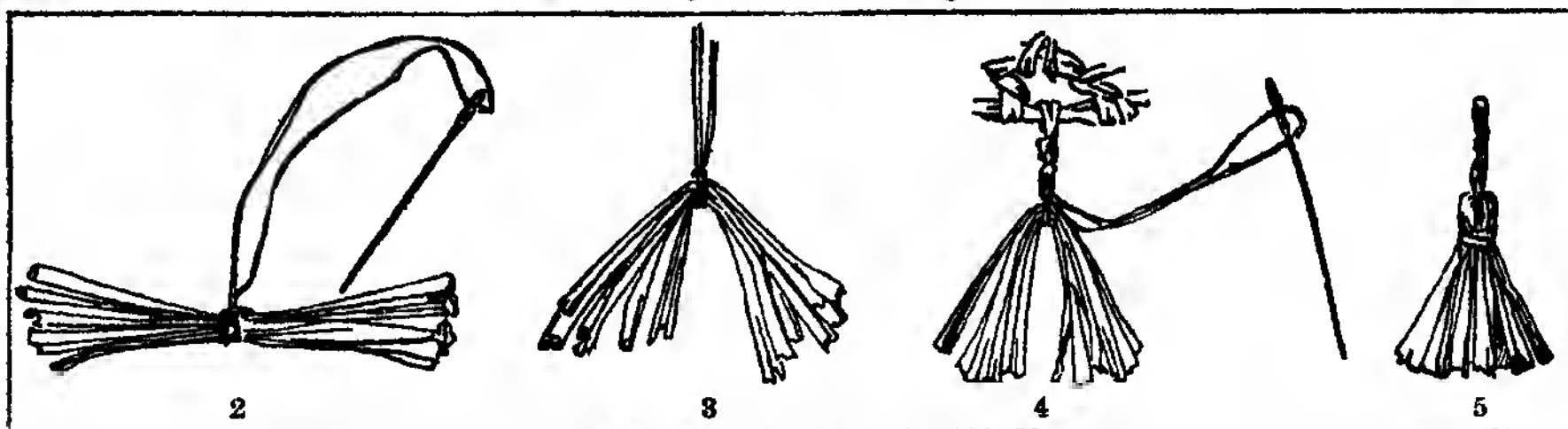
There are two kinds of this material, one a little coarser in texture than the other. This is really the bass, and it comes from the bark of the lime-tree; while the raffia, which is finer, is made from a palm grown in Madagascar. Specially prepared raffia may be had at all good fancy-shops in large or small hanks. As it can never be got in very long pieces, frequent joins are necessary, and the simplest way to join it is to make an ordinary knot and cut the ends off neatly—but not too closely or it will come undone again—for we are going to use raffia like wool, and work it into a basket with a crochet-hook, afterwards plaiting a handle, and finally decorating it with small tassels. When we get our bundle of raffia we undo it and shake it out, then we select about forty of



HOW TO JOIN THE RAFFIA

To begin our bag, we make 20 chain stitches; return, making one treble into each alternate chain, missing the chain in between, but making one chain between the trebles. The next row is made of one double crochet into the hole formed between the two trebles, and one chain in between each double crochet, so that there will be 10 chain and 10 double crochets in each row. This makes the body of our basket, and is continued backward and forward for 22 rows. The 23rd row is the same as the 2nd—a line of trebles and chain. We must adjust with our fingers, and straighten out our work if necessary, as we go along. We finish off in the usual way, and press our strip of work with a warm iron.

Any projecting "ends" are now snipped off with the scissors, and we proceed to make a bag of our strip by folding it in half and joining up the two sides. To do this we take a darning-needle with a big eye, and thread it with a *thin* strand of raffia, and sew the sides together with "over-and-over" stitches.



HOW A RAFFIA TASSEL IS MADE

the nicest and longest strands, having as nearly as possible an equal thickness. There are always one or two unsatisfactory strands in every bundle. Those with a hard, green edge are not nice to work with, for they split as we twist them round the crochet-hook. We knot our strands of raffia together, cutting away any thin, straggling ends, and winding it round a postcard as we join it.

The knot to use is shown in picture 1. We tighten it by pulling both ends and both strands from either side together, and then pinch the ends back along the strand with the fingers to make them lie flat. It is best to leave about an inch, and if the ends do not "work in," we can cut them off from our basket afterwards. This is a pleasanter task than it sounds, as the raffia has a very fresh, hay-like smell, which comes out as we handle it.

We must use a bone crochet-hook of medium size, and the secret of success is to work very loosely. Each loop must be sufficiently large for the next one to be pulled through easily.

If neatly done, the join will hardly show. The four tassels ornamenting the bottom of our bag are made of six or seven stout strands three inches long. We tie them across the

centre, as shown in picture 3, with a double strip of fine raffia, threaded through a needle. We must pull it tight, and pinch the two ends together, as shown in picture 4. But before we quite finish the tassel, or give it its little "waist," we attach it to the bottom of the basket by passing the needle through a double stitch, drawing the tassel nearly up to the basket, leaving a quarter of an inch of raffia, round which we wind our thread. We insert the needle in the tassel again, and come out just low enough to make the "waist," as shown in picture 4. A double twist round the raffia will do for this, and then we make a knot to keep the bind firm by mak-



THE BAG COMPLETE

ing a buttonhole-stitch into the bind. We pull it tight, and cut off our thread, leaving the end as long as the tassel. We do not cut it off short, because raffia is so springy that

GAME OF WHAT IS IT

it might come undone. There are four tassels, and each one is, of course, made and fixed in the same way.

Now for the handle. We take six strands of stout raffia, thirteen inches long, and plait them together in twos—just as we plait our hair—tying the ends for the time being with a piece of cotton to keep them together. To fix the handle to the basket, we undo one end of our plait for about one and a half inches, take three strands, and thread them between a treble at the side of the top of the basket. We pull them all together again, and join them to the other three strands with a bind, which

is made by winding a thin thread round and round, as we have learnt to do for the tassels. For these two tassels we shall need to go round several times, and must finish off with *two* knot stitches this time, for the handle has to bear a greater strain than the tassels on the bottom. We fray out the remaining end of the plait which forms the tassel, and cut off any uneven ends, fix the other side of the handle in just the same way, and our bag is finished.

If the raffia is hard when we buy it, it can be plunged into hot water and left until cold; removed, shaken, and used when dry. It will then have become quite soft and pliable.

THE GAME OF WHAT IS IT

SOME FAMILIAR THINGS THAT WE ALL KNOW

A NUMBER of well-known things are described on this page, and, after reading each description, we should try to guess what the particular thing that is referred to is. The correct answers are given in the next part of Things to Make and Things to Do.

1. Here is a hard, dull little bit of something that looks as if it had come out of the earth. No wonder its name means "foam," for it is so light that once it floated on the top of a hot, vaporous stream in an island of the Mediterranean. After the stream had cooled, someone picked up the foam, thinking that it would be useful for scraping paint off wood or for taking ink off fingers, or that it might be powdered and made into soap.

2. Look at this dainty, fragile little object on the window-sill, with its cool feel, soft as a feather's. It is not really white. If we look close, we see that it is transparent, with six delicate arms. Perhaps we can see only four. Then two must have been knocked off during a long journey, when its companions jostled it as they all tried to get here first. There! It can't stand our hot hands, and has vanished, leaving a wet spot.

3. Ages, perhaps 50,000 years ago, millions and millions of tiny creatures lived on the surface of the sea. As they were soft, they found it necessary to make armor for themselves as a protection against the creatures that gobbled them up, so they took lime out of the water and made themselves hard coats. When they died, their little bodies sank down to the bottom of the sea in such numbers as to bury up the bodies of fish. The descendants of these tiny creatures are doing just the same thing in the Atlantic now, and what do you think their coats, pressed together, make?

4. "Thud—thud—thud!" goes a wonderful machine, which seems to work all by itself. It is very busy pumping, and its labour must be most important, for it goes on for years and years, not ceasing for a minute's rest. It is made in two halves, each of which is in two divisions, opening into one another by valves. Can you tell what it is?

5. Suppose we can shrink up much smaller than Alice did in Wonderland, and swim inside the hole in this brown thing from which a spurt of water has ceased to pour, and go down the passage. We are going against the stream, and, as we proceed, the passage narrows. There are turnings this way and that, and strange little jelly-like creatures live in nooks along the sides of them, and whip us back with their long arms, for they say we have come the wrong way, and the whole colony is wanting its dinner. So we drift out of the passage again. Every day we handle a similar dwelling-place of these small creatures. What do we call it?

6. There is something which can kill a man or a tree, cure some kinds of disease, boil water, propel a vehicle, destroy a building, give us light, or carry messages for us. We can store it in our bodies, too, and it is even in the tiniest atoms. What is it?

7. One day, by mistake, a little grain of sand drifted inside the shell of a creature living at the bottom of the sea. No one likes to swallow grit, and this animal did not want the sand; but, being unable to get rid of it, it had to make a fluid to cover the hard, sharp grain of sand and prevent it from hurting. Then it made more and more coverings, until no one would have thought that this beautiful, shining, smooth thing was formerly a grain of sand. What is it?

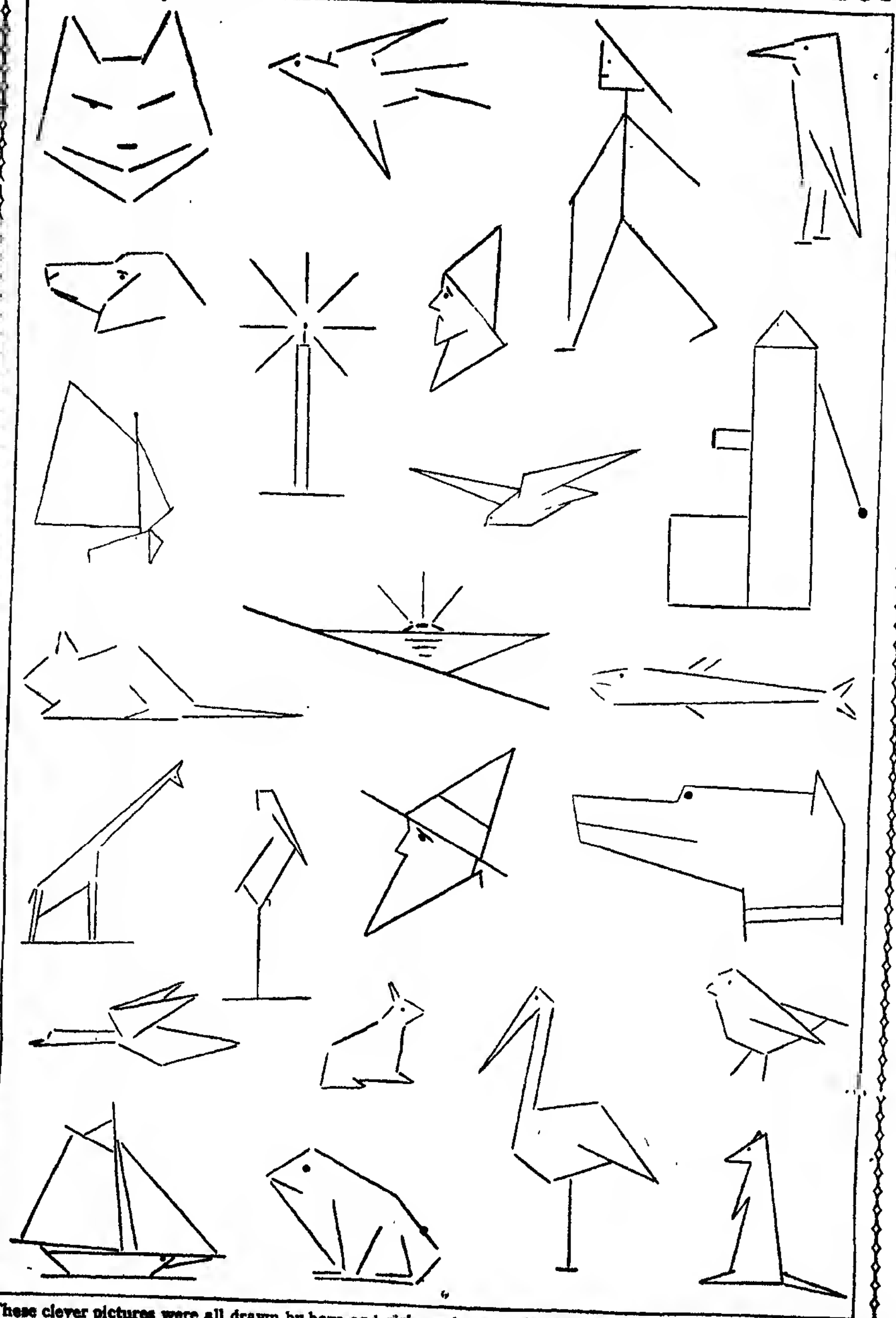
TWENTY-FIVE WAYS OF SAYING THE SAME THING

THE following line from Gray's Elegy is probably unique, in that it can be transposed in twenty-five different ways, and yet each time express practically the same thought:

The ploughman homeward plods his weary way
The weary ploughman plods his homeward way
The ploughman, weary, plods his homeward way
His homeward way the weary ploughman plods
His homeward way the ploughman, weary, plods
The weary ploughman homeward plods his way
The ploughman, weary, homeward plods his way
His way the weary ploughman homeward plods
His way the ploughman, weary, homeward plods
His way the ploughman homeward, weary, plods

His homeward weary way the ploughman plods
Weary, the ploughman homeward plods his way
Weary, the ploughman plods his homeward way
Homeward his way the weary ploughman plods
Homeward his way the ploughman, weary, plods
Homeward his weary way the ploughman plods
The ploughman homeward, weary, plods his way
His weary way the ploughman homeward plods
His weary way homeward the ploughman plods
Homeward the ploughman plods his weary way
Homeward the weary ploughman plods his way
The ploughman, weary, his homeward way plods
The ploughman plods his weary homeward way
Weary, the ploughman his homeward way plods
Weary, his homeward way the ploughman plods

HOW TO DRAW A PICTURE WITH 12 LINES AND A DOT



These clever pictures were all drawn by boys and girls, and are made up of twelve straight lines and one dot, neither more nor less. It is more difficult to draw anything if we are confined to a few lines than if we put in as many as we like. Let us see if we can make drawings with twelve lines and a dot as good as these.

THE PUZZLES OF THE WIZARD KING

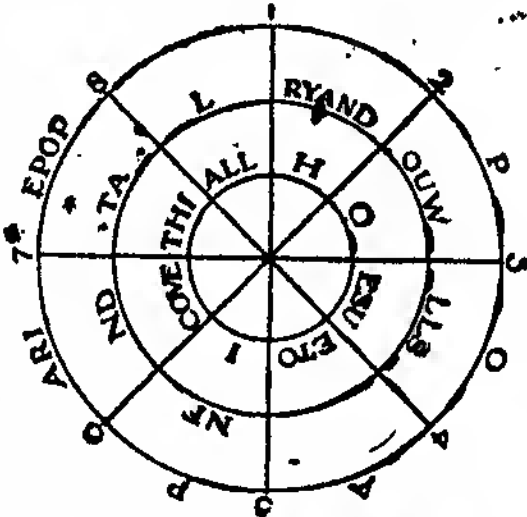
On these pages are a number of problems and puzzles of various kinds. The explanation of the puzzles that are given here, and of those that will appear in future pages of the Wizard King, is as follows: In a hidden-word puzzle the name is made up of the parts of two or more words. Example: "When ill *I lie* so comfortably in this cool, pleasant room!" The letters in italics show hidden flowers, lilies. In a *double acrostic* we write down under one another the names of the different things mentioned, and the initial letters read down from top to bottom, and the final letters read in the same way give the names of the persons or things we have to discover. In a *single acrostic* only the initial letters spell anything. In a *square word* the words forming the square read the same downwards and across. *Beheaded names* almost explain themselves. Tears, ears, is an example. In a *riddle-me-ree* my first, second, and so on, are letters. A *charade* is similar to a riddle-me-ree, only in this case my first, second, and so on, are parts of a word, not merely letters. For example, my first is a professor *don*; my second opens a door, *key*; my whole is an animal, *donkey*. *Transformations* and *anagrams* are almost the same thing. An anagram is the rearrangement of the letters of a word or words, to form a new word or words which have some relation to the old ones. The following is an example of *quasi arithmetic*: What number, from which one is taken, is even? S-even. The solutions of the puzzles appear in the next Things to Make and Do.

I. THE UNKNOWN QUOTATION

One day there came to the palace of one of the Eastern princes a poor man who was very fond of poetry. He had with him a sheet of parchment, and on it was the curious diagram shown here. The parchment had been sold to him by an old bookseller, who told him the following particulars about it :

"At each point in the diagram, or wheel, where lines cross, you must place a letter.

When the proper 25 letters have been placed, the spokes will read as follows, beginning in each instance with the same letter at the centre.



1.—A Greek letter. 2.—A short poem. 3.—A bird of Egypt. 4.—A metal. 5.—An image. 6.—A goddess of the ancient Egyptians. 7.—A flower. 8.—Is never found where there is no water.

"Around the tire is a quotation from an English poet, with his name. The middle circle is a sentence encouraging you to solve the problem. The innermost circle is another sentence of further encouragement."

The prince, who, as it so happened, knew most of the world's poets off by heart, solved the problem, and sent the poor man on his way rejoicing. What was the solution?

2. THE MYSTERIOUS INSCRIPTION

The following is the translation of an Arabic inscription discovered in the temple of Persepolis. It can be read in such a way as to form four moral and useful maxims.

say	know	says	knows	says	knows
spend	have	spends	has	spends	has
tell	hear	tells	hears	tells	hears
covet	see	covets	sees	wants	sees

Do } all } for he } all } often } more
not } you } who } he } } than
 } } } } } he }

3. HIDDEN FISH

Be calmer, O aching heart! I have seen dogs push a door open. Let's have a good frolic, O do, dear father! Our teacher rings the bell five minutes too soon. Decatur bothered the Algerines more than once. Place the crowbar below the log in order to raise it.

4. SQUARE WORD

Without sight ; enamored ; white and hard
and polished ; a delicate fibre in the system ;
one who dries anything.

5. RIDDLE IN RHYME

I am, as you'll agree with me,
The funniest thing in land or sea.
My mouth is bigger than my head,
I always stay within my bed.
Yet, funnier still, I often rise.
* Now answer *that*, you solvers wise !
Yet though in bed I always stop,
You'll see me racing neck and crop
Through the valley, down the hill ;
In fact, I'm very rarely still.
This condition answer me,
This funniest thing in land or sea.

6. DOUBLE CHARADE

Two riddles at once are by me now rehearsed ;
The first of my first yields the first of my
second ;
'Twixt the next of my second and next of my
first,
There's often a miss — so sages have
reckoned.
Of my first and my second the wholes, may
be seen
Uncommonly common on a common, I ween.

7. ROB ROY'S PROBLEM

Many of us have read the fascinating story of Rob Roy, by Sir Walter Scott. Rob Roy's real name was Robert Macgregor; and during his leisure moments, when he was not fighting, he was very fond of inventing puzzles. The printed signature below shows one of his little problems.

ROB ROY

Rob Roy wrote beneath his own original little sketch :

"Start at any point you like, and trace my name, as it is given above, without removing the pen from the paper, crossing a line, or going over any of the lines twice."

How is Rob Roy's problem solved?

8. MISSING LETTERS

B-t-e-n-h-d-r-a-d-h-d-y-i-h,
W-e-t-e-i-h-i-b-g-n-i-g-o-o-e,
C-m-s-p-u-e-n-h-d-y'-o-c-p-t-o-s,
T-a-i-k-o-n-s-h-c-i-d-e-s-o-r.

THINGS TO MAKE AND THINGS TO DO

9. BEHEADED NAME

Autumn o'er the earth has strewed
 Me far and wide ;
 Everywhere my form is viewed,
 Sere, and dried.
 Now behead, I then pertain
 To all house-tops ;
 Oft the welcome, welcome rain,
 From me drops.
 Behead again, the nuns at prayer
 Us oft repeat.
 Transpose—from woe and care
 Relief entreat.

10. THE SQUIRREL AND THE CORN

A box has nine ears of corn in it. A squirrel removes three ears a day, and takes nine days to carry all out. Explain this.

11. THE WIZARD'S ALPHABET

Which letter is a measure ?
 Which is an industrious insect ?
 Which letter is a drink ?
 Which one is an exclamation ?
 Which is a river in Scotland ?
 Which is a bird ?
 Which is a vegetable ?
 Which is everlasting ?

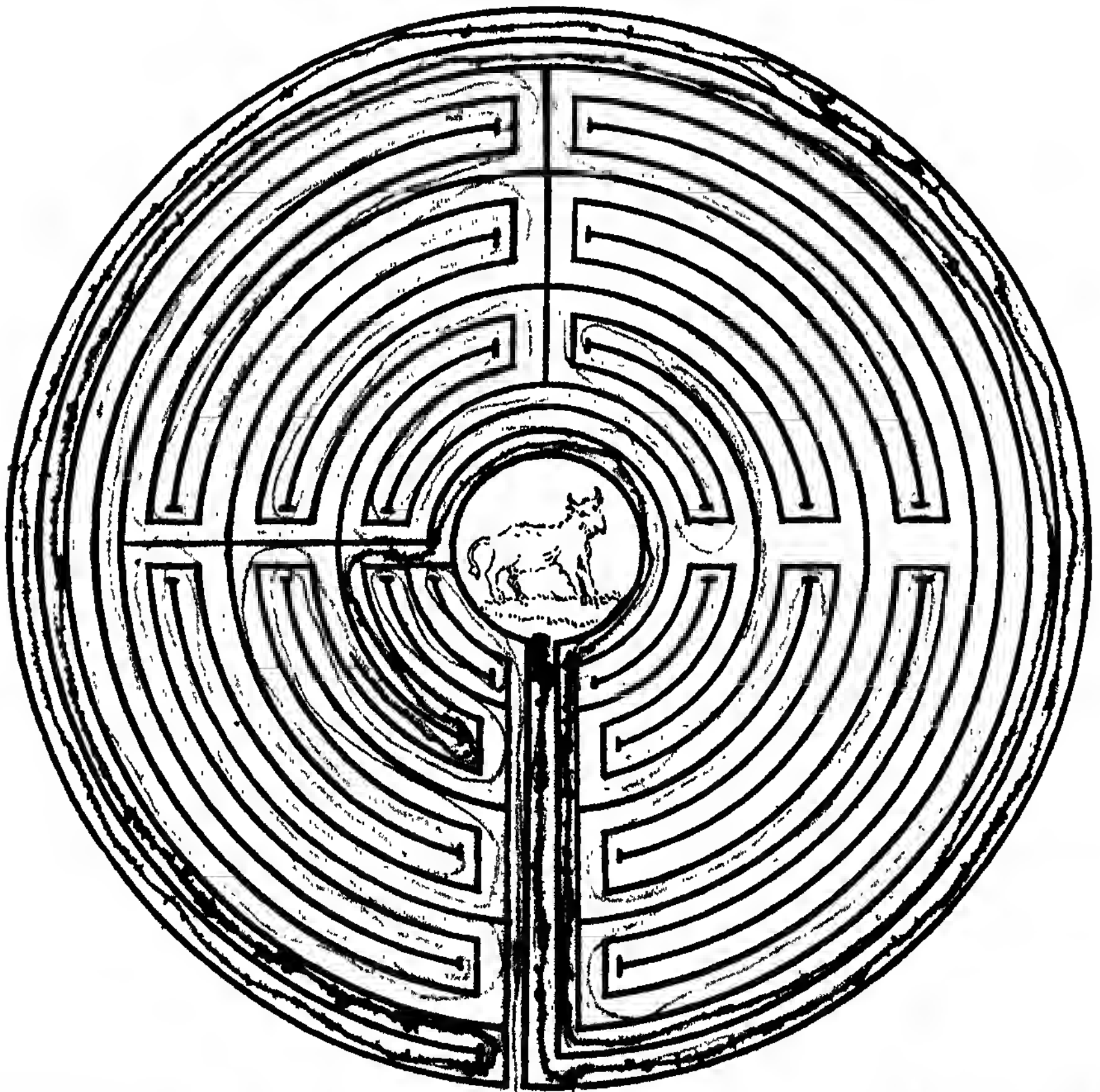
12. ANAGRAMS FROM SHAKESPEARE

- (a) Scour in a dust-tin.
- (b) Alike, a slim, raw sheep.
- (c) Close ruin.
- (d) Tap oracle.
- (e) Free such lost dogs.
- (f) Fan on hot jug.
- (g) Scour a lion.
- (h) A charm'd one.

CAN YOU FIND YOUR WAY INTO THIS MAZE?

IN the centre of this maze is a goat that has strayed in from the outside and does not know how to escape. It looks very simple

goat. Do not spoil this page of the book, but take a piece of tracing or tissue paper, or any other transparent paper, and trace off the lines



to enter by the opening at the bottom of the maze and to reach the centre, but it is not so easy as it looks. Let us see if we can reach the

of the maze. Then, starting at the opening at the bottom, try with a pencil or point to trace your way to the goat without crossing any lines.

WHAT GAMES DO THESE PICTURES REPRESENT?



THE



1



K

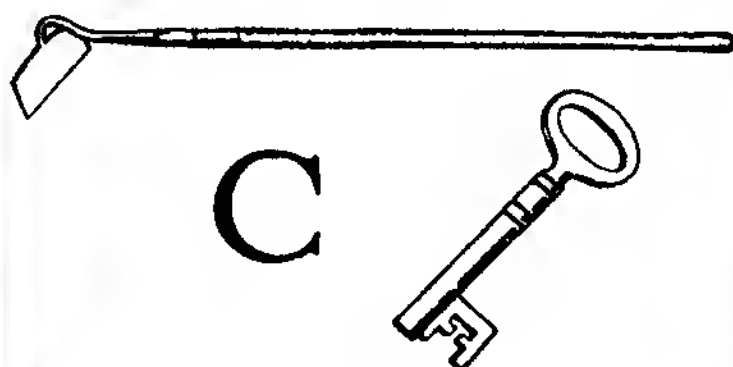
2



&



3



C

4



&



K

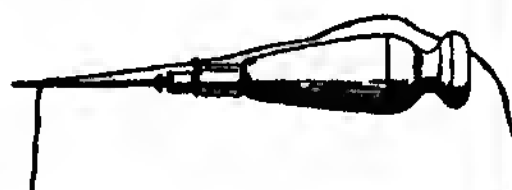
5



6



B



7



8



9



10

The names of the objects and scenes shown in these pictures, together with the letters given, spell correctly the names of ten games that boys and girls play. Examine the pictures and see how many of these names you can build up in the manner indicated. The answers are given in next Things to Make and Things to Do.

THE NEXT THINGS TO MAKE AND DO BEGIN ON PAGE 5517.

PEARY'S ROAD TO THE NORTH POLE



After centuries of attempts, in which many lives had been lost, the world was startled by the news that Captain Peary had, on April 6, 1909, reached the North Pole, an achievement he had been struggling to accomplish for years. Here we see the route taken, and the small pictures show points on the road to the Pole.

LOOKING INTO THE BOTTOM OF THE WORLD



Until the dawn of the twentieth century the regions that lie around the South Pole were almost unknown to man. Of late years, however, several expeditions have fought their way into this ice-bound and romantic region at the bottom of the world. January 9, 1909, a party of Englishmen, under Lieutenant Shackleton, succeeded in reaching a spot 111 miles from the Pole. In the course of this expedition the great volcano, Mount Erebus, was ascended for the first time, and here we have a very wonderful picture showing the little group of intrepid and determined men standing on the edge of the crater and looking down into the interior of the earth. The great crater is nine hundred feet deep and half a mile across. The photograph was taken from the lower part of the crater's edge, and on the left steam is seen rising from the depths below. This picture is from Lieutenant Shackleton's wonderful account of his expedition, published under the title of "The Heart of the Antarctic."

The Book of ALL COUNTRIES



The regions round the Poles, showing that the North has been much more explored than the South.

THE SEARCH FOR THE POLES

MAN has always shown a strong desire to find out everything about the world on which he lives. As we look at a globe or a map, and think over the stories of the countries, we realize how gradually the oceans and continents—nay, the very shape of the world—came into view for mankind. Bit by bit the surface of the earth has become known. A man braver than the rest has gone out into the unknown and added a little to knowledge.

Much has been done in exploring the hidden parts of the earth, but there are still secrets to find out in the vast regions at the extreme north and south of our world. We say, "As wide as the Poles apart," when we mean to express great distance, for the Poles are the ends of the imaginary line running through the earth, on which it is said to turn on its everlasting journey round the sun—as a wheel turns on its axle.

We must gather together all that we know of snow and ice, of intense cold, of the difficulties of crossing the snow-fields and glaciers of the Alps and Himalayas, the mountains of Tibet and Alaska, and we must also

CONTINUED FROM 5371



recall the deep quiet and loneliness of these parts of the world. Then, putting

all these snowy regions of the world together, we shall begin to have some idea of the icy caps that surround the Poles, each larger in size than the continent of Europe. Now, if we place a globe or map of the world before us, so that we look directly down on these polar regions in turn, we shall see that there is a very great difference between them. We shall see at a glance that, on the north, the great continents of Eurasia and America stretch far up within the limits of the arctic circle, and that there are waterways passing each side of the immense island of Greenland, and by the Bering Strait into a huge polar sea.

THE CENTURIES IN WHICH THE SOUTHERN WORLD WAS LOST

When we turn to the south, we see a great difference. The lands of the southern half of the world, New Zealand, Australia, Africa, and South America, all point to the antarctic regions, but are separated from them by thousands of miles of open sea, which for ever surges round a vast polar continent, covered deep with ice,

like Greenland. Few men have tried to find out much about it.

Not so the north polar cap. Nations particularly fond of daring adventure, such as the Norsemen, the Dutch, the British, all living within easy reach of a gate in the icy wall that surrounds it, early began to make their way thither. Perhaps they were partly attracted by the wish to find out whence came the huge bergs, or mountains of ice, floating down from the north. And the immense whales, too, were eagerly sought for in the icy seas of the North.

HOW KING ALFRED LISTENED TO THE STORY OF FIRST POLAR EXPLORER

A thousand years ago, Alfred the Great listened to the story of the first recorded arctic expedition. Ohthere, who dwelt "northmost of all the Norsemen," had so strongly within his heart the passion of discovery that he could not sleep for thinking of what the unknown North might hold. So he gladly left his herds of 600 reindeer and his other riches, and pushed on north and east till he found the White Sea and the Dwina River and the North Cape. On his return he told the king of the wonders he had seen. The king must have doubted the description of the huge, fat walruses and their "noble teeth." But Ohthere, to prove the truth of his story, held out the walrus-teeth he had brought as a present to the Saxon king, and Alfred was convinced and wrote down the story Ohthere had told him.

Ohthere spoke of the natives he had found so unfriendly near the mouth of the Dwina. Unpromising as is the country stretching up to the frozen polar sea, there were then, and are now, men, women, and children who live scattered over the wide and dreary expanse, belonging to a very old family of nations—poor relations, we may call them, of the Chinese. Most of them are Eskimos, or Innuits, and these are found chiefly round about the shores of North America and the islands. Other tribes of the same family live on the desolate tundras of Asia, which are frozen hard during the winter, and form a swampy morass during the summer.

THE HARD LIVES OF THE PEOPLE OF THE FROZEN NORTH

It is difficult for us to imagine their life. No fruits, no vegetables, a little moss; but no trees, no cornfields, no

towns, no way of getting about except in small boats made of skins, or on sledges drawn by dogs or reindeer. For food, clothing, oil to give light and heat, they depend on the seals, walruses, bears, whales, foxes, and fish that share the arctic solitudes with them.

In winter, when the sun does not rise for months, they live in round houses, like basins upside down, built of blocks of frozen snow, which thaw as summer appears. And such a summer! For the sun, once up, stays up later and later till he does not go to bed at all. Then they take to tents or shelters of earth or stone.

In a gallery of the Museum of Natural History in New York, we can see many things that help us to enter into the life of the most northerly people of the world. There are their fur dresses; the women wear trousers as well as the men, and the little girl's suit is particularly interesting, as well as the water-proofs, boots, and mittens.

The canoes—the small one is, perhaps, a woman's—we can fancy being paddled in the dark water. The difficulties of the chase are brought home to us as we look closely at the spears and darts to kill seals and birds, at the fish-hooks and harpoons, at the whistles for luring the deer, at the bows and arrows, and at the ice-scratchers to attract the seals.

THE MEN WHO PUSHED INTO THE UNKNOWN NORTH

Though the Eskimos are interesting, men have gone into the frozen North for other reasons. Whalers at all times have sailed in search of the oil-giving monster, and have added little by little to the knowledge of northern coasts; and, following Ohthere, many brave Northmen visited Greenland, Iceland, and the surrounding islands and coasts. Others have sought a passage from ocean to ocean, the Northwest Passage, of which you have read so much.

As we look at our north polar map, we find many of the names of the dauntless men who faced, one after another, the storms and the ice and the dangers of starvation in small and badly provided boats, to find out the secrets of the Far North. We remember the voyages of Sir Hugh Willoughby and Richard Chancellor, and how they opened up trade in the White Sea port of Russia, as we read on another page, and to these we

MEN WHO SEARCHED FOR THE POLES



Willoughby



Frobisher



Hudson



Captain Cook



Belcher



Sir John Ross



Sir James Ross



Amundsen



The race of men of all nations for the North Pole.



M'Clure



Parry



Sverdrup



Sir John Franklin



Captain Scott



Lieutenant Shackleton



Mr. Jackson

These are some of the brave men who have risked their lives to reach the Poles. The middle picture shows how successive explorers have got nearer and nearer to the top of the world. Foremost is Captain Peary, behind him the Duke of the Abruzzi, then Dr. Nansen, then Nares, Nordenskiöld, and others. The photographs of Captain Scott and Mr. Jackson are by Thomson, and that of Lieutenant Shackleton is by J. Beckett.

can add those of Frobisher and Davis, belonging to the days of Elizabeth. On the northeast coast of Novaya Zemlya, we find Barents Land, and a bay called Ice Haven. These recall one of the most interesting of the voyages of those days. Barents and his stalwart friends were Dutchmen, and they sailed from Holland, carrying with them silks and velvets, with which they hoped to open up trade with China by the northeast route.

THE LITTLE HOUSE WHERE A FEW MEN SPENT THE ARCTIC NIGHT

When the ice closed in, and the storms made it impossible for them to go further, they were forced to run their ship ashore and make a house of shelter from her planks, and live as best they could in it for many weary months through the long arctic night.

Bears and foxes prowled around them, and they felt far away from the bright, shining homes where they were so sorely missed. When the spring came, they built an open boat, and in it made their way homewards, landing on the north of Europe. They were picked up by a ship, but the heroic Barents died in the open boat. It gives us an idea of the sort of men these were when we read their journal, and find that they never missed a chance of airing and refolding the precious goods with which they had been entrusted. In the Rijks Museum at Amsterdam are the trifles they left behind them in the House of Safety at Ice Haven; little books and instruments, pieces of clothing, candles that will still light. They were discovered by a Norwegian captain and presented to Holland in memory of her gallant sons 274 years after their owners had closed the door and started on their adventurous journey homeward.

THE MEN WHO MAPPED OUT THE WORLD AROUND THE NORTH POLE

And still the north polar map went on filling up, as brave men continued exploring and naming shores and straits, islands and coasts. We can mention only a few out of their great number, such as Hudson and Baffin, Bering and Cook, John and James Ross and Parry. These last bring us to the great name of Franklin. He made several expeditions about Hudson Bay and Great Bear Lake, surveyed many miles of coast, and, after superhuman exertions, died June 11, 1847, while trying to find the Northwest Pas-

sage, near King William's Land. Not one man of the expedition came home to tell the sad tale.

THE RELICS OF SIR JOHN FRANKLIN THAT MAY BE SEEN IN LONDON

Many expeditions were sent out from England and America to seek the two lost vessels, the Erebus and the Terror, and to discover what had become of the brave men who had sailed in them. It was years before any traces of their fate were found in the great white North. They had all died from cold and hunger. Among the exhibits at Greenwich Hospital are a number of relics of Sir John Franklin that were collected and brought home. There was also found the paper giving brief particulars of when the ship was left and of the loss of the commander and the sledge parties.

These expeditions which went out to search for news of Franklin gained much knowledge of the great mass of islands and straits at the extreme north of the New World, and the Northwest Passage was actually traversed in 1851 by M'Clure. Not quite all of it was made by water, however. Five ships belonging to one of these expeditions were abandoned by order of the leader. Only one, the Resolute, was ever heard of again. She drifted 1,000 miles, and the American captain who found her took her into port; and in the end she was refitted and restored, even to the libraries of the officers, and sent across the Atlantic as a present to Queen Victoria and the British people.

HOW MEN CREPT NEARER AND NEARER TO THE TOP OF THE WORLD

And still the efforts went on, in spite of loss of life, loss of ships, and hardships of every description. Dr. Elisha Kent Kane, Dr. Isaac I. Hayes, and Charles Francis Hall, in American ships, all helped to gain knowledge of Franklin and the North. Captain Hall spent five years among the Eskimos, and gives us, in his book, most interesting descriptions of their way of life. The islands of Spitzbergen were thoroughly examined, also those of Novaya Zemlya. Austrians discovered and named Franz Josef Land, far north of Novaya Zemlya, and ever the boldest and most fortunate crept a little nearer, and a little nearer, to the mysterious region of the Pole itself. Professor A. E. Nordenskiöld, a Finn by birth, but a citizen of Sweden, made

TRAVELLERS NEAR THE NORTH POLE



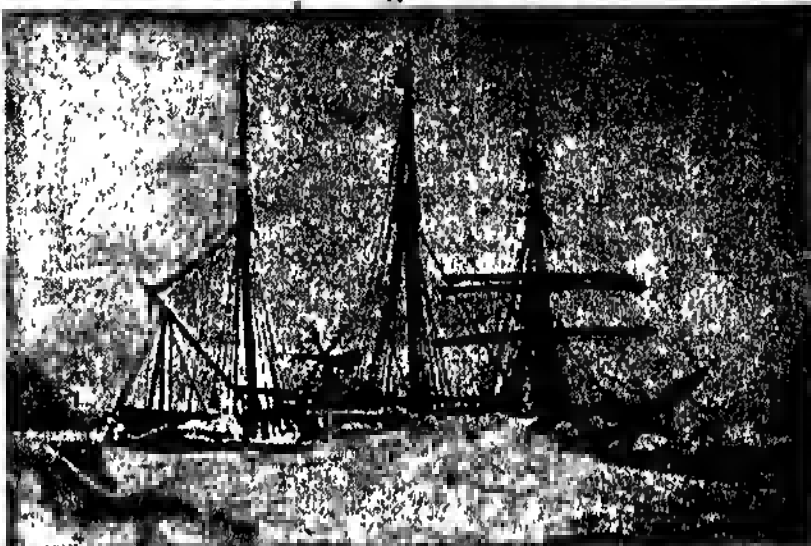
Here we see the British flag planted at the North Magnetic Pole by Sir James Ross. He accompanied the expedition of his uncle, Sir John Ross, that started in 1829 and spent about five years amid arctic snows.



Ross's ship, the Victory, became ice-bound. It had to be abandoned, and the crew made their way over the snow till they found a whaling vessel to take them home. Here the men are building snow walls round the ship.



Sir William Parry made no fewer than five arctic expeditions, and in this picture we see the two vessels with which he made his second voyage, in 1819. On returning to England, Parliament awarded him \$25,000.



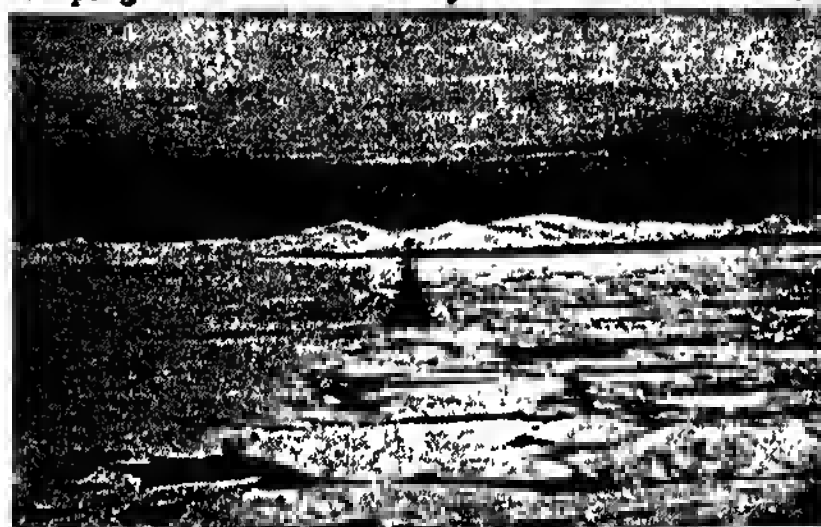
In 1902 a German expedition under command of Professor von Drygalski went to the antarctic seas and discovered Kaiser Wilhelm II. land, off the coast of which their vessel, the Gauss, wintered, as shown here.



In this picture we see some of the German explorers who went to the antarctic regions in the Gauss in 1902, camping out on the ice. They returned home in 1903.



This picture, which shows the little house and tent occupied by Captain Peary on one of his polar expeditions, is from a photograph taken at midnight.



Here we see the Morning, one of the two ships that went to the aid of Captain Scott's south polar expedition in 1903. To the left the solid ice can be seen.



The explorers with Captain Scott's expedition used drag-nets to examine the life of the Antarctic Ocean. When dragging, they sheltered behind snow walls.

several expeditions into Greenland, and in 1878 and 1879 succeeded in crossing over the top of Asia, thus making the Northeast Passage. In 1879, Lieutenant Frederick Schwatka, of the United States Army, made a successful expedition, discovering perhaps the last relics of Franklin. In 1881, Lieutenant A. W. Greely, also of the United States Army, with a small party, set out for Lady Franklin Bay. He was left with provisions for two years, but not until 1884 did the relief expedition reach the party. Some had died of starvation, and all were very weak.

In 1875, the *Alert* and *Discovery* sailed away under Captain Nares, to try to reach the Pole by Smith's Sound. After being frozen in the ice for the winter, when the men made many exciting and dangerous sledge journeys, they returned home, having opened up large tracts of new country.

THE FIRST CROSSING OF GREENLAND BY NANSEN AND HIS COMPANIONS

Dr. Fridtjof Nansen, a brave Norwegian, was the first to cross Greenland from one coast to the other. It was a most difficult journey, toiling up for three weeks to the inland plateau, about 9,000 feet high. The sledges had to be dragged up the steep way over rough and soft ice. Once on the high, cold plateau, the ice became firmer, and the onward and downward journey was made by hoisting sails on the sledges and sending them racing down the slopes, while the four men glided along on their swift snow-shoes.

Robert E. Peary, of the United States Navy, is the great hero of discovery in the north of Greenland. During one week of one of his journeys he discovered thirty glaciers, and later succeeded in rounding the north of Greenland. Standing on a tremendous cliff 4,000 feet high, he had a magnificent view, which proved to him that Greenland was indeed an island. Mrs. Peary went to Greenland with him on several of his expeditions, and there a little daughter was born to them, September 12, 1893.

Doctor Nansen, who had learned much of the winds and the currents while exploring Greenland, believed that a ship might drift nearer the Pole than any one had ever been. So a ship called the *Fram* was built, immensely strong, and with a little party of thirteen left Christiania

in 1893. Instead of trying to keep out of the ice, the little boat sailed into it, and was frozen in. The ice floes drifted back and forth, and not until August 13, 1896, was the ship finally broken out. It did not reach the Pole, but it did go further north than any ship had ever gone before.

THE WRECKED SHIP THAT DRIFTED WHERE NO MAN HAD EVER BEEN

The account of how the *Fram* drifted slowly on, how usefully and pleasantly the time was passed, how charming and homely were the festivals on birthdays and at Christmas, all reads like an impossible romance when we think of the bitter cold, the terrible winds, and the lonely ship lifted bodily up by the ice till her bottom could almost be seen.

After nearly two years, Nansen thought he, with a companion, could accomplish more by leaving the ship and sledging with dogs towards the Pole than by staying in the drifting ice any longer. So he set off in March, 1895, with Lieutenant Johansen, on a most dangerous journey. They succeeded in reaching a little farther north than did the *Fram*, but their journey lasted many months. They spent the long winter, sleeping most of the time in a little hut they put up near Cape Flora, in Franz Josef Land.

By accident they fell in with an expedition sent out by Mr. Alfred Harmsworth, now Lord Northcliffe. This expedition, under Mr. Frederick George Jackson, spent nearly three years in Franz Josef Land, but did not get very far north. The relief ship sent out for Jackson took Nansen back to Norway, and soon he heard of the safety of the *Fram* and all on board.

In 1897 the intrepid Andrée, a Swede, tried another way of reaching the Pole. This was by balloon, starting from Dane's Island, Spitzbergen. He was last seen floating away to the north, and was never heard of again after that day. No one knows what became of him and his two companions.

Many other men explored the North, every one adding something to our knowledge of the regions, but no one getting very close to the Pole. In 1903, Captain Roald Amundsen, a Norwegian, in a tiny ship, the *Gjoa*, set out to make the Northwest Passage. The boat was frozen in for three winters, but finally got free, and passed through Bering Strait

THE PEOPLE OF THE GREAT WHITE NORTH



The people of the great white North live much the same to-day as did primitive man thousands of years ago. They are barely civilized, and dwell in rude huts, as we see here, which shows a group of Laplanders at home.



In summer the Eskimos live in tents made of seal-skins sewn together with bone needles and the sinews of animals. In winter they build huts of snow.



* This picture shows an Eskimo hut made of stones and earth. The cold of the climate will not allow trees to grow, and consequently wood is very rare and costly.



As a rule, the Eskimo women, some of whom are seen in the picture, dress in the same way as the men. Their clothing is of seal-skin, with the fur inside.



This is the summer home of a family of Laplanders. The dog shown in the picture will be used, in company with others, to haul a sledge in the winter.

* Three photographs copyright by Messrs. Underwood and Underwood, N.Y.

in August, 1906. This was the first ship to sail from ocean to ocean north of Patagonia.

HOW COMMANDER PEARY FOUND THE POLE AT LAST

We have already spoken of Lieutenant Peary's exploration of Greenland. For years he thought of little except the frozen North. He had discovered Greenland to be an island, and had found many interesting things about the desolate land, but he was not satisfied. Finally he reached the determination to try to do what so many had failed to do, that is, to reach the North Pole. The first trial in 1898 was unsuccessful, of course, but he made other expeditions, and still others, until at last he was successful. But the attempts were not wasted, for each expedition taught its lesson and showed what mistakes must be avoided if success was finally to come. Every voyage he learned more about the ice, the Eskimos, what the dogs could do, what provisions must be carried, and why others had failed.

A SHIP WHICH COULD FORCE A WAY THROUGH ICE

A number of men interested in the far North, formed a society known as the Peary Arctic Club, and provided money for the brave explorer. It had been found that ordinary ships were too light for the work, for in the terrible North the great floating fields of ice sometimes come together and crush a ship like an egg-shell. So the club had a ship built especially for the work. It had very powerful engines, and its frame was braced at every point to resist the crushing force of the ice. Then, too, it was sharp in front, in order to cut through the ice. This ship was called the Roosevelt, in honor of the former president, and was used first by Commander Peary in the expedition of 1905 and 1906. Though this expedition was not successful, it went further into the North than any had gone before. In fact, it came within less than 200 miles of the Pole.

In 1907-8 the ship was entirely refitted. New engines were provided and other changes were made. On July 6, 1908, the ship, carrying the party which was finally to be successful, left New York, commanded by Captain Robert A. Bartlett, a brave Newfoundland sailor. The Roosevelt sailed up the Greenland coast and stopped at Etah, which is the

most northern point at which people live all the year round. From here the ship carried twenty-two Eskimo men, seven-teen women, ten children and two hundred and twenty-six dogs. On the fifth of December, 1908, the boat reached Cape Sheridan, though it had several times been almost caught in the ice.

THE IMPORTANCE OF FOOD IN THE ARCTIC REGION

It is easy enough to get clothes which will keep one warm while in the cold regions, but where every particle of food must be carried along, and to be without food is death, it is necessary to choose the best and the most easily packed food which is nourishing and at the same time takes up little room. It has been found that pemmican, which is dried beef ground to a powder, and mixed with tallow, is the best food. Sugar is also good. The pemmican furnishes strength and sugar furnishes heat.

Commander Peary had formed his plan carefully. Six men who had come with him, seventeen Eskimos, nineteen sledges and one hundred and thirty-three dogs left the land February 28, 1909. After they had gone a certain distance over the ice, a small party would load all the food it carried, beyond what was necessary to take it back to the ship, on the sledges of those who were going forward. The supporting party would then turn back. Later another party would also turn back, leaving any unnecessary food with those who were to go on. The plan worked well, for when the last supporting party turned back it was found that the party which went on to the Pole had twice as much food as was necessary to bring it back to the ship.

THE POLE IS REACHED AFTER CENTURIES OF EFFORT

Finally (150 miles from the Pole), Captain Bartlett, who commanded the last supporting party, turned back, and Commander Peary, Henson, his faithful colored attendant, and four Eskimos started on the desperate rush to the Pole. Good progress was made, and finally, on April 6, 1909, the instruments seemed to show that the Pole had been reached. Several flags were hoisted, and the party camped. Mr. Peary went several miles further on and then turned to the right to take observations and to be sure that he had gone far enough. For about thirty hours he remained around the camp tak-

FARTHEST NORTH AND FARTHEST SOUTH



Lieutenant Shackleton and his fellow-explorers suffered many hardships during their dash to the South Pole. Food fell short, and the ponies of the expedition had to be killed until only the three shown here were left.



Here we see Commander (now Admiral) Peary with some of the Eskimo dogs which he found so useful in his conquest of the North Pole. They have proved themselves to be better than ponies for this work.

ing photographs, making observations and the like.

They had reached the Pole. The question was, could they get away? For with the unsuccessful attempts in the past the trouble had been to get back to civilization in safety. A broken sledge, an accident to the dogs, or any one of a dozen things might prevent them. On the return journey, they threw away everything except what they would be sure to need, so that the dogs would have less to pull, and started back on the seventh of April. For most of the way they kept the trail which they had made while advancing, and some of the snow huts which had been built a month before were still standing.

Finally, sixteen days from the time they left the Pole, they reached land. Two more days brought them to the ship, where they told of their wonderful news, but they could not tell the world, because for more than two months longer the ship was held fast in the ice. The time was spent in exploring, hunting and seeking to find out more of the region in which they were. Finally they broke the ship out of the ice, and made a quick voyage back to Labrador and gave the news to the world. Congress voted to promote Commander Peary to the rank of rear-admiral as a reward for his success.

THE MEN WHO HAVE EXPLORED THE BOTTOM OF THE WORLD

Till the seventeenth century it was believed that there was an immense southern continent connected with Tierra del Fuego, and stretching up to Australia. Many adventurous voyagers set back by degrees the coast-line of this imaginary continent to the outline sketched more or less about the antarctic circle on our maps of to-day. We meet with many names already familiar—that of Drake, who showed “that the Atlantic and Pacific unite south of South America in the free and unconfined open;” Cook, who set limits to the antarctic region; Ross, who, with his two ships, the *Erebus* and the *Terror*, sailed from Tasmania on New Year’s Day, 1841, and discovered the mountainous country of Victoria Land, and the two lofty volcanoes that he named after his ships.

Besides these are Weddell, Biscoe, and Balleny, all Englishmen, who added to our knowledge of the antarctic; D’Urville,

a Frenchman, who landed on the coast and called it Adélie Land, and Charles Wilkes, a United States naval officer, who named Wilkes Land. Many other expeditions filled out the outlines of the continent, bit by bit, but few were able to go inland, if, indeed, they could land at all. Interest in the antarctic increased in England, and now we have several names of which to tell.

In 1901, Robert F. Scott, Royal Navy, led an expedition which spent more than two years in the antarctic. Several long journeys were made on the ice-cap which covers the land, and the relief ship brought the party home in safety. At about the same time, a German and a Swedish expedition also made explorations.

In 1908, Lieutenant Ernest Shackleton, who had been with Commander Scott, set out to reach the South Pole. A motor car was taken, and ponies, instead of dogs. The car was of little use, but the ponies did good work. The going was terrible, and the ponies failed one by one. The last fell into a crevasse and was lost. The party had intended to kill him for food that night, and because of this loss the Pole was not reached, though the party came within ninety-seven miles of it. On the way they climbed to a great tableland, 11,600 feet above the sea.

THE SOUTH POLE IS REACHED TWICE

We have already told of the voyage of Captain Roald Amundsen over the top of North America. When the news came that the North Pole had been reached, he was preparing an expedition to explore the arctic regions. Suddenly he decided to make a dash for the South Pole in the *Fram*, the stanch little ship that Nansen had used.

On January 14, 1911, he landed with nine companions in the Bay of Whales, climbed to the top of the ice barrier which guards the shores, and built a hut on the ice, which was to be his home for nine months. He had with him abundant supplies for two years, and 115 Eskimo dogs, which he had brought from Greenland. Meanwhile an English expedition, under Captain Scott, of whom we have already spoken, was camped more than 350 miles eastward, under the shadow of the burning volcano, Mt. Erebus.

In February, Captain Amundsen began taking supplies toward the south,

WHAT LIFE IS LIKE AT THE NORTH POLE



Men tried for centuries to reach the North Pole and at last succeeded. But all the time the bear, "the little old gentleman in the fur jacket," as the Laplanders call him, has roamed at will over this dreary spot.



When at last man reached the Pole, he found simply a dreary waste of snow and ice, as shown here, and all he could do, after years of effort, was to build little snow shelters in which to rest, and then return home.

The lower picture is published by permission of the "New York Herald," and that of Upernivik on page 5464 is by Mr. Sandon Perkins.

and leaving them there for the future. When winter came on, for you must remember that south of the equator the seasons are reversed, the men were very comfortable in the little hut, which they called Framheim. Every preparation was made during the winter.

When spring came, five men with four sledges and fifty-two dogs started south on October 20, just a week before Captain Scott's party began the dash for the Pole. During most of the way, the Norwegian party found good ice and good weather, though the mountain range they crossed was hard to climb, and some of the dogs were lost. The men all used the Norwegian skis, and the dogs trotted along. Finally, on December 14, 1911, observations showed that they were almost at the Pole, and, after further observations, on December 16th, a tent was erected, and the Norwegian flag and the pennant of the Fram were hoisted. These were left standing, and some records were left in the tent, when the party started back toward the ship. The high land around the Pole was called Haakon VII Plateau, in honor of the king of Norway.

The journey back was without mishap, and 99 days after the party left Framheim it was back, safe and sound.

The second Scott expedition, in the ship Terra Nova, left Port Chalmers, New Zealand, November 29, 1910, and established winter quarters on M'Murdo Sound in January, 1911. The expedition was large, and many of the party were scientists, who spent much time in studying the life on the ice and in the sea, the temperature, the structure of the land, and the like. The party had nineteen Siberian ponies, thirty dogs, and three motor sledges.

Before the winter set in, supplies were placed along the way, and when the spring opened, some of the party started October 27, 1911, just a week after Amundsen had begun his dash. Five days afterward Captain Scott and the remainder started, and overtook the motor sledges. These, by the way, though they could pull heavy loads, broke down, and some of the ponies had been lost. The weather was very bad, with intense cold, high winds, and much snow. Finally, on January 3, 1912, the party was only 150 miles from the Pole. With four companions, Captain Scott started on the last lap of the journey,

sending back four men who had made the trip up to this point. These men reached the headquarters safely, but week after week went by and Captain Scott and his companions did not return. A searching party under Doctor Atkinson found the bodies of Captain Scott, Doctor Wilson and Lieutenant Bowers on November 12, 1912.

From Captain Scott's diary it was learned that they had reached the Pole on January 18th, and found Captain Amundsen's tent still standing. On the return journey, Petty Officer Evans died on February 17th after an accident. Captain Oates had fallen sick, and fearing that he might hinder the progress of the others, walked off into the storm on March 17th. His body was not found. The others staggered on until they reached a point they knew to be only eleven miles from One Ton Camp, where there was abundant food and fuel. Here a terrible storm overtook them. Without food or fuel they were forced to cling to the shelter of the tent. The last entry in the diary was on March 25th. How much longer any of them were alive, no one can say, but it could have been only a few days.

Since the expedition of Captain Scott, two other English expeditions have added much to our knowledge of the antarctic regions. The first, led by Dr. Douglas Mawson, who had been with Shackleton's expedition, suffered many hardships, but made many new discoveries. Sir Ernest Shackleton made the attempt to cross the antarctic continent, but did not attempt to reach the Pole. Several expeditions to the northern regions have been made since Peary's success, but they have been intended to add to our knowledge rather than simply to do again what has already been done.

Here are some of the differences between the arctic and the antarctic regions. The former is a great sea of ice; the latter a great continent with high mountains, some of which are dead volcanoes. The temperatures seem to be lower in the South than in the North. Once the climate of the southern region was warm, for there is coal there, but no animal life is to be found on the vast continent now. Gulls and penguins live along the shore, where they can get food from the sea, but nothing more.

THE NEXT STORY OF COUNTRIES IS ON PAGE 5533.

The Story of FAMOUS BOOKS

A WONDERFUL STORY OF THE JUNGLE

OF all of Kipling's stories, most boys and girls love the Jungle Books best. There are two of them, and one story besides in another volume which tells of Mowgli's life after he left the wolf pack forever. The books tell of a child stolen from its home and brought up by wolves. He was taught many things by wise old Baloo and by Bagheera, and by Kaa, the old, old python, and learned to know the Jungle well. We tell you here only a few of Mowgli's adventures. You must get the books to read them all. There are the stories of the fierce wild dogs, of the monkey-people and of the blind old cobra, and many others. It is difficult to say which one likes best. Your editor has read every one of them a dozen times, and he does not know. He would not give up a single one, and wishes that there were quite as many more.

THE STORY OF MOWGLI, THE BOY-WOLF

IT was a hot evening among the Seonee hills in Northern India, and Father Wolf was starting down the slopes to kill for Mother Wolf and his four cubs. He had slept the daylight hours away on the warm rocks and was in fine trim, ready and alert for the hunt. His limbs were stretching out for a long, steady run, when of a sudden they stiffened up, and the great wolf leaped high into the air—his spring arrested mid-way. A little naked brown baby ran into the open space before the cave, came boldly up to the great form and tumbled laughing in the dust against it.

"A man's cub!" he cried in astonishment. "Bring it to me," said Mother Wolf, and without so much as scratching his skin, Father Wolf seized the babe in his great jaws and laid it within the cave, where he pushed aside the wolf-cubs and crawled against Mother Wolf's warm sides.

"How smooth he is, how little and how bold!" she cried. "But how comes he here?"

The answer came quickly. First a worrying, snarling growl, and then the huge form of a tiger appeared in the clear moonlight out of the jungle's dense shade.

Father Wolf sprang back into the cave, and took quick stock of his position. He did not fear for himself,

nor for his family, but for the little brown baby which had just come to them. The tiger's great head and shoulders blocked the cave; where before had streamed the moonlight now blazed his red-gold eyes.

"Where is the man-cub? Give him to me!" he snarled. "He is *my* kill!"

"The man-cub is ours!" cried the great gray wolf,— "to kill if we choose!" The tiger's roar filled the cave.

Mother Wolf sprang to her feet, her eyes gleaming savagely, and faced the snarling tiger.

"Shere Khan," she said, "hunter of little naked cubs, the babe is mine! He shall live to run with the Pack, and hunt with the Pack, and in the end he shall hunt thee! Begone!" Not for nothing had Mother Wolf borne the name of Demon ere Father Wolf had won her from the Pack, and the fierce striped cat wavered before her. He could not force a way through the cave's narrow entrance and he feared the Demon's snap, so he backed slowly and sullenly into the open, snarling a parting taunt that he would tell the Pack of this fostering of a man-cub.

Now the custom among the Seonee wolves was that when it had grown large enough, every cub had to be shown to all the wolves before it

could be taken into the Pack. Accordingly upon a certain night each year all the wolves came to the Council Rock—a hillside littered over with rocks and gray boulders, where the wolves could easily hide.

Father Wolf took his own cubs when they could run, and the little man-cub, whom they called Mowgli, the Frog, to the hill-top for the Pack Meeting. The moon was shining brightly down upon the scene and threw dark shadows from the rocks, and in every shadow crouched or stretched a wolf. In the centre the cubs tumbled and rolled while their parents sat round in a circle. Upon the Council Rock itself sat Akela, the Leader of the Pack, and with him some forty or more wolves of every size and color. Every now and then a wolf would cross swiftly into the opening, and sniff at a cub and examine him before going back to his place. Regularly rose and fell Akela's cry, "Look well, O Wolves, look well! Ye know the Law!" as cub after cub was pushed into the moonlight to be examined. At last came Mowgli's turn and he sat laughing and playing with the pebbles in the centre of the ring.

Then sounded a different note from the Gray Wolf's cry; it was the roar of Shere Khan from behind the rocks. "The cub is mine. Give him to me! What have the Free People to do with a man's cub?"—And the rocks re-echoed "A man's cub!" and Mother Wolf's hair bristled upon her neck, and all the wolves sat up uneasily.

Now, it was the Law of the Jungle, that when any dispute arose as to the right of a cub to be admitted into the Pack, he must be spoken for by two members who were not his father and mother.

"Who speaks for this cub?" said Akela, and the Pack stayed its murmuring in the warm, still night, but not one spoke. Mother Wolf prepared for a fight, when Baloo, the Brown Bear, who teaches the wolf cubs the Law of the Jungle, rose up and grunted. He was the only other creature allowed at the Council and when he spoke all listened. "The man's cub?" he said. "There is no harm in him. Let him run with the Pack. I will teach him."

Mother Wolf relaxed a little, but she was still anxious, when Bagheera the Black Panther, happening by chance to

come that way as he returned from a kill, bought Mowgli's life from the tiger with a dead bull.

So Mowgli entered the Seonee wolf pack for the price of a bull, and on Baloo's good word. He lived in the cave with Mother and Father Wolf and played with the cubs, and had for his teachers in the Law of the Jungle, the great sleepy brown bear, and the black panther. He grew, and waxed strong and agile, and skilled in all the signs that the wild beasts know; the scratch of the bat's claw, and every rustle in the grass, and every splash of a little fish. He had many friends, for Bagheera and Baloo loved him more than any little wolf-cub, and he was useful in picking the long thorns out of the wolves' feet. But Shere Khan, the tiger, hated him always, and plotted to kill him some day. Mowgli knew something of men, for there was a village below the jungle, on the slopes, and sometimes he would go down and watch from the maize-field, but he thought of them as very different from the loved Jungle Folk and felt no wish to go among them.

Now it came to pass, when Mowgli was eleven years old, that all the wolves who had been at the Pack Meeting when he was chosen, were old, and Akela the Lone Gray Wolf was old, and Shere Khan the tiger told the young wolves that they should not be led by a dying wolf and a man's cub. And the Pack grew to think that he had no place with them. Still Mowgli knew it not, until at last, one warm, sultry day in the forest, Bagheera took him aside and told him the tiger's plot. Then Mowgli's heart was hot within him, for he loved the Jungle Folk, and he determined to pay Shere Khan in full measure for his evil-doing. He consulted Bagheera, the Black Panther, who sent Mowgli down to the men's huts in the valley to fetch the Red Flower that grows outside their huts in the twilight. Every creature in the jungle feared this flower, and no beast would call it by its proper name.

Mowgli ran swiftly down into the lowland where the villagers lived and peered through the window of a hut and watched the fire leaping on the hearth. All night he saw the husbandman's wife feed it with black lumps, and in the morning, as a child was carrying some forth into the cow-byre, Mowgli took the pot from the

boy's hand and disappeared into the mist. All through the day he sat in the cave and fed his fire-pot with dry branches, and in the evening he was summoned to the Council Rock. Shere Khan was there and all the wolves, but Akela did not sit upon the rock, but lay beside it to show that he was no longer leader, for he had missed his kill the night before, and the leadership of the Pack was open.

Then Shere Khan took it upon himself to speak in the meeting and he rudely demanded that the man-cub be given him for meat. Akela and Bagheera and about ten wolves gathered around Mowgli, but the rest sat up and yelled, "He is a man—a man—a man!" and they gathered around Shere Khan, whose tail began to switch. "Now the business is in thy hands," said Bagheera to Mowgli. "We can do nothing except fight!" Then Mowgli, furious with rage and sorrow, for he had not known how the wolves hated him, flung the fire-pot on the ground, and thrust his dead branch into the fire, and whirled it above his head among the cowering wolves.

"I see that ye are dogs," he cried. "I go from you to my own people. The jungle is shut to me and I must forget your talk and your good company. There shall be no war between any of us and the Pack, but there is a debt to pay before I go."

He strode over to Shere Khan and caught him by the tuft on his chin, and beat him over the head with the flaming branch till the tiger whirled in an agony of fear. Then he flung him aside and struck around the circle of wolves, till they and the tiger ran away howling. But when they had gone, Mowgli caught his breath and sobbed as though his heart would break; he had never cried in all his life before.

Then he ran to the cave and bade farewell to Mother and Father Wolf and the cubs, and just as the dawn was beginning to break he went alone down the hillside to the lowlands and the villages. Up to this time he had lived with the Jungle Folk and never thought of himself as other than a wolf, but the Jungle had cast him out and now he must make himself a man.

It was midday when finally he reached a village some twenty miles distant from the Council Rock, and Mowgli was hun-

gry as he sat down to wait by the gate. A man came out and he opened his mouth and pointed down it. The man ran away and brought the priest and many of the villagers, and they stared and pointed at the little brown wolf-child. The women pitied him for the scars on his arms and legs, and one came closer and peered at him, thinking him like her boy which the tiger had taken from her. Now Messua's husband was rich, and the priest thought it a good thing to pretend that he had been the means of restoring her son.

"Take the boy into thy house, my sister, and forget not to honor the priest who sees so far into the lives of men," he said, and the woman beckoned Mowgli into her hut. There all was strange to him because he had never been under a roof before, but he saw that he could tear away the fastenings from window and roof, which comforted him. When bedtime came he stretched himself in some long grass at the edge of the field, and there came the wolf-cubs.

For three months Mowgli lived in the village, learning the ways and the speech of man. The children made fun of him because he knew nothing of their games, and the priest scolded him because he broke some of the village laws, and he told Messua's husband to give him work to do. So Mowgli was set to herd buffaloes, and every morning he went out with the other children to the grazing ground on the plain among the rocks and ravines and muddy pools. He made himself master among the other herders, and bidding them pasture the cattle by themselves, drove the buffaloes to the edge of the plain where the river came out of the jungle. This was the spot where he had agreed to meet Gray Brother, the eldest of the wolf-cubs.

"What news of Shere Khan?" said Mowgli.

"He is away, for game is scarce, but he means to kill thee."

"Very well," said Mowgli; "as long as he remains away, sit on this rock where I can see you as I come out of the village. When Shere Khan returns, wait for me under the dhâk-tree in the ravine in the centre of the plain."

So for many days Mowgli drove the buffaloes out in the morning and back at twilight, and ever he saw Gray Brother's back a mile and a half across

the plain, and he knew that Shere Khan was still away. But one morning he did not see the wolf upon the rock and he drove the buffalo into the ravine with the golden-red flowers, where under a tree sat Gray Brother.

"Shere Khan's plan is to wait for thee at the village gate this evening," said the wolf, panting. Mowgli thought deeply, for the tiger was very cunning and he must meet wile with wile.

"Gray Brother," he said, "canst thou cut the herd in two?"

"Not I, perhaps, but I have brought a wise helper," and Akela appeared from a near-by hole. Then Mowgli told them to divide the cows from the bulls, and he and Akela went with the bulls to one end of the ravine, and Gray Brother took the cows and calves to the other. His plan was to catch Shere Khan between the two. When the herd swayed this way and that, the children ran away to the village to say that the buffaloes had gone mad.

The sides of the ravine were very steep, and Mowgli knew that Shere Khan could find no foothold in his haste. When all was ready he cried aloud to the tiger, and Shere Khan awoke from a deep sleep and came on to battle with a low-toned snarl. Akela began to harry the bulls from the head of the ravine so that they stampeded, and there was no stopping the wild charge of the herd. Shere Khan heard the thunder of the hoofs, and searched the sides of the ravine for some escape, but none was there, and he ran on and on till at the foot of the ravine he came upon the fiercer cows. He turned at bay, but the buffaloes trampled him under foot and swept on, and herd met herd in a wild impact, whose force carried them clear out into the plain. Then Mowgli, with the help of the wolves, while the kites whirled overhead, began to strip the tiger of his ten-foot skin, and as he worked, Buldeo, the village hunter, came to them with insolent offers of help. But Akela held him down on the ground while Mowgli went on cutting the skin with his knife, until he took pity on Buldeo and allowed him to go back to the village.

It was misty twilight by the time Mowgli and Akela had herded the buffaloes and brought them back to the gate. The conches and bells were blowing and ringing and all the village waited by the

gate. Mowgli thought they were there to welcome him because he had killed the tiger, but they shut the gate against him and belabored him with stones and called him Sorcerer, Wolf-brat and Jungle Demon. Only Messua took pity on him, but even she told him to go away lest the villagers should kill him. So Mowgli drove the buffalo herd in through the gate and turned away and left the village. Man had turned him out as the wolves had done, but this time as he looked up at the stars he felt happy.

He went back to the forest and hunted with the four wolf-cubs from that day. But he was not now just the little man-cub that had sported with Baloo and run with the Pack, half wolf, half man, that the animals had half despised, half feared. He knew the secrets of the jungle, but he had gained the power of man, and all the animals feared him, and were his friends. He had not meant to punish the village for stoning him, because Messua lived there, and he loved her. But one day Buldeo the hunter was boasting in the forest how Messua and her husband were to be killed for sheltering the Jungle Demon, and their lands divided among the villagers. When Mowgli ran down into the village, he found Messua gagged and bound and wounded, and her husband with her. The sight of her blood made him sick and angry, and he planned a great revenge upon the village. He sent for the elephants and bade them destroy the huts and walls; he drove the deer and the pigs among the crops, and bade the panthers walk in the streets. And the Jungle came in upon the village and all men were afraid, thinking that a curse had come upon them. So they left their huts and their temples and fields, and they ran from the evil place, and it became a wilderness. Only Messua and her husband escaped, for Mowgli had sent them away through the forest to the English, before he let the jungle forth upon the crop-lands.

And the years rolled by and Mowgli grew to be a man. Father and Mother Wolf had died and Mowgli rolled a boulder against the mouth of the cave and cried the Death Song over them. Baloo and Bagheera grew old and stiff, though they still went to the "looking-over" at the Council Rock. Akela met his death in a fight against the Red-Dogs of the Dekkan, when Mowgli entrapped

them to the fords through the gorge of the Wild People, the honey-bees. Only Mowgli and the young wolves of the pack grew stronger. Hard exercise, good eating, and baths when he was hot and dusty, had given him strength and growth far beyond his age, and even a whisper of his coming cleared the wood-paths.

The year that Mowgli was seventeen, the spring seemed especially beautiful. The Black Panther lay on his back and beat with his paws in the air, the birds tried over the first few notes of their spring song, and the elephants trumpeted through the valley in the moonlight. These signs were not fresh to him, and usually he delighted in them, seeking for the first spring flowers, and imitating the new voices of the Jungle People. But this year a feeling was on him that was utterly strange, and drove his breath out in little gasps and choked the sounds in his throat. The peacock called to him, and the great kite, but he could not answer them, and he turned hot and cold, and then neither hot nor cold, but angry with that which he could not see.

He called to his brothers, the four wolf-cubs, to make a spring running with him to the marshes of the North. He called, but never one of the four answered, for they were far away practising their spring songs. So Mowgli went by himself, and forgetting his unhappiness, sang aloud as he sped under the white moonlight through the spring-decked jungle. As he came to the marshes, the scent of flowers stopped him, for this was as far as his hunting-ground ever went. The marsh ended in a broad plain, and there a light twinkled. It was long since Mowgli had concerned himself with man, but this night the Red-Flower drew him forward. He pushed on to where the light stood and saw he was in the outskirts of a village. The door of a hut opened and a woman came out. It was Messua, and Mowgli in the grass began to shake as though he had fever. He called to her and stepped into the light.

Messua ran quickly, then stopped. This was not the Mowgli of her dreams. Instead she saw a youth, fine, strong and fair, his locks crowned with a wreath of jessamine. She turned to run away, but he placed a hand upon her shoulder and said softly, "Messua, O Messua!" and his voice banished all her fear.

"My son," she stammered, "but no longer my son. It is a godling of the woods." And she pulled him into the hut and set food before him, and Mowgli drank the warm milk in long gulps, Messua patting him on the shoulder. Then he slept in her hut, and when after a day and a night he woke, Gray Wolf had come to find him. He went back to the Jungle, knowing that he must bid all his friends there good-bye, for the call of the man-pack was strong in his ears, and he had promised Messua to return.

They called a meeting at the Council Rock, but the animals were busy with their spring running and could not come. Only Bagheera the Black Panther and Kaa the Great Snake, Baloo the Bear and the four wolf-cubs met to say farewell to Mowgli, Master of the Jungle, who was leaving to make another trail.

"Cry thy fill, Manling," said Kaa as Mowgli came heavily up hill and cast himself face downward upon the Rock.

"What is it?" the boy moaned. "My strength is gone from me. The Red Flower is in my bones. I bathe and am not cool, I lie down and do not rest. Ever I hear a double step upon my trail and when I turn my head no one is there. I call and none cry again."

Kaa spake again, turning around the Rock: "Man goes to Man at last though the Jungle does not cast him out." And the wolves began in chorus, "So long as we shall live . . ."

But Baloo, blind now, and very old, said, "Little Frog, make thy lair with thine own blood and people; only when there is need, remember the Jungle is thine at call."

Still Mowgli's heart beat unevenly, and breath came in gasps. "I would not go; but I am drawn. How can I leave the Jungle?" he said again.

"Having cast the skin, we may not creep into it afresh; it is the Law!" the wise snake hissed.

A crash sounded in the thicket and Bagheera stood by the Rock, dull stains dripping from his paws and lips. "For the bull that bought thee," he said to Mowgli. "All debts are paid now. Farewell, Master of the Jungle. Remember Bagheera loved thee." And he was gone again while the hillside re-echoed "Farewell."

THE NEXT STORY OF FAMOUS BOOKS IS ON PAGE 5615.

THE GIANT EAGLE'S WINGS OF STONE



In the Calgardup district of Western Australia there are many wonderful caves, and one of them, owing to its great size, is known as the Mammoth Cave. The entrance, which is surrounded by great ferns and half hidden amid giant trees, has an Oriental appearance, and inside it is like a palace of the Arabian Nights. From the roof hang many fantastic stalactites, like those which we see on page 1377, and the dripping of mineral-laden water has built up on the floor wonderful rocky shapes, such as that seen in this picture. This formation is known as the Eagle's Wings, and at a distance has the appearance of a huge bird, with half-spread wings, perched on a great boulder. The cave also has a wonderful representation of an organ.

The Book of STORIES



THE GIANT'S PLAYTHING

LONG ago, giants lived among the German mountains. Now, there

was a great castle, called Burg Niedeck, that stood on top of the highest mountain in Alsace, and here the most powerful of the giants lived with his wife and family. He had one child, a little girl named Freda.

Freda was as tall as a church steeple. She was a curious child, and very fond of prying about and looking at things which she had been told to leave alone. She was allowed to roam all about the mountains, and to play in the woods and forest, but she was not allowed to go down into the valley where the little people lived.

These little peasants tilled the ground, and planted corn and wheat and barley, and grew the vines, and dug the ditches, things the giants could not do. And the giants lived by taking what the little people made. Now, it was said that the first time a peasant found his way up into Burg Niedeck it would be the end of the giants. But Burg Niedeck was very difficult to reach, and no peasant had ever thought of trying to get there.

One day Freda was playing outside the castle gates. The valley looked so cool and green and shady that she slipped down the mountain-side to find out what was below.

Presently she saw a peasant plough-

CONTINUED FROM 5385

ing. He had two horses, and the iron of the plough shone and glittered. With

a cry of joy, Freda knelt down.

"What a dear little thing! I will take it home to play with."

Spreading out her handkerchief, she carefully lifted the plough and the horses and the poor peasant into the middle; then, taking the corners in her hand, she ran up the mountain-side, skipping and jumping for pleasure. Her father met her at the gate.

"Now, little one," he said, "what is pleasing you so?"

"Look," said Freda, spreading out her handkerchief, "I have found a most wonderful new toy." And she lifted out the plough and the peasant.

But the old giant frowned and shook his head angrily.

"What have you done, thoughtless one?" he said. "The peasant is no toy. Have you not heard that as soon as a peasant comes to Burg Niedeck there will be an end of the giants forever? Take it back instantly to the valley, and perhaps the spell will not break."

Sadly Freda took the plough and the horses and the peasant back, and set them in the cornfield. But it was too late. That night all the giants disappeared, and in the morning the castle of Burg Niedeck stood in ruins. And no giant has been seen there since.

THE WIND SINGS DOWN THE CHIMNEY

HANS ANDERSEN'S TALE OF THE SIGNBOARDS

THE Wind is a merry creature. Have you seen him sweeping across a field and making the wheat ripple like the waves of the sea? That is the Wind's dance. And the Wind not only dances, but he sings. Listen to him singing down the chimney now.

"Shoo! shoo! sh-sh-sh!" the Wind is saying. "If there were no old gentlemen wearing tall hats that I could send spinning down the road, I should be tired of town life. All the excitement and fun have gone from it. A hundred years ago there was nothing I liked better than a good blow down this street. It was more like a picture-show than a place of business. Every house was hung with signboards. There was the tailor's board with figures painted on it to show that he could turn the shabbiest rascal into a fashionable gentleman; the barber had a long pole with a wooden razor hanging from it; fishes, loaves, hats, cheeses—all the things, in fact, that were sold in the town—were painted on signboards, and when I made them swing and clatter, the noise was deafening. What a merry time I had one night among the signboards! What was it set me on that piece of mischief?"

The Wind grew silent for a few minutes, and then gave a jolly roar that made the house rock. "Oh, I recollect it all!" he shouted down the chimney. "It was the day when the shoemakers removed from their old guildhall into their new building, and brought their signboards with them. Rich and powerful were the shoemakers in those old days, and their procession was a sight worth seeing.

"They had a clown to clear the way—a comical figure with a black face and clothes made out of a patchwork of colors. How the crowd laughed as he struck right and left with his great bladder! I don't see such frolic nowadays. Behind the clown came the musicians; they were followed by the banner-bearers with the great silk banner of the shoemakers, adorned with a large black boot and a two-headed eagle.

"Mounting the scaffold where the signboard was to be put up, the chief shoemaker began to make a speech. But the clown jumped up beside him, and the people roared at his grimaces.

Joining in the fun, I rattled every signboard, and the speaker got down, saying: 'It is no use trying to talk in this wind. Let us put up the signboard.'

"But I was resolved," chuckled the Wind, "that the signboard should not be put up. I blew the shoemakers' aprons over their eyes; I upset their ladders; I carried away their wigs and hats. At last they gave over struggling, and went to feast in their new hall.

"I was bent on mischief. Having got the best of the shoemakers, I thundered up and down the streets, trying to think of some new prank. I began unroofing old houses, and the air was filled with falling tiles. In the night, a wilder piece of mischief-making occurred to me.

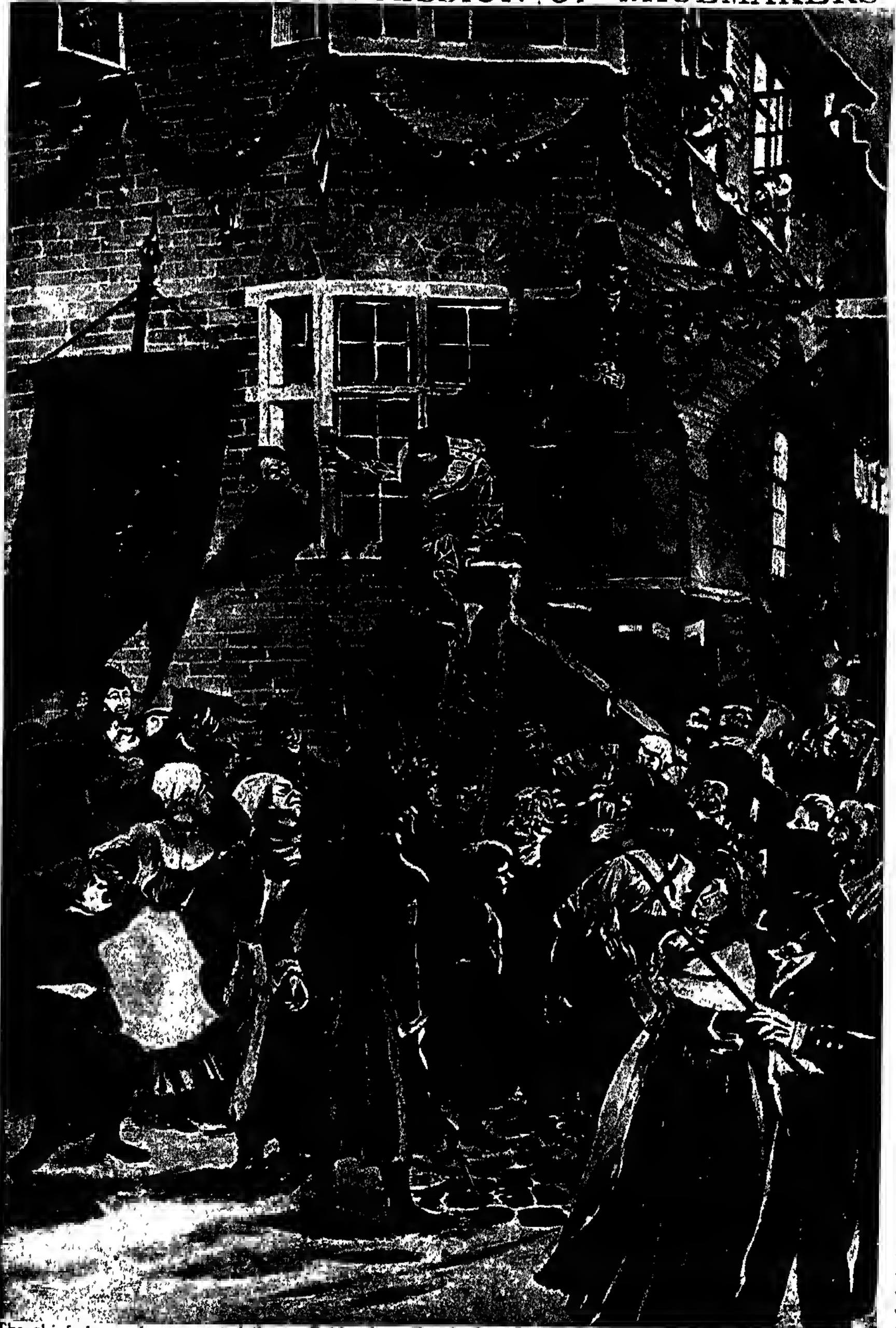
"I got among the signboards and rearranged them. Though I say it myself, the work was performed with wit and skill. When the townspeople woke up the next morning, they found that the inscription 'The Institute for High Education' had been blown on to the billiard club. The Institute got in exchange a signboard taken from the day-nursery: 'Children Reared by the Bottle.' A good-natured furrier had a fox painted on his signboard. This I carried across the street, and put it on a house occupied by a hard, cunning councillor, who pretended to be a saintly person. That made the townspeople laugh; and so did the sign which I stuck in the railings of the judge's residence. It was the barber's pole with the wooden razor. 'The razor' was the nickname that the judge's wife had earned through her cutting tongue.

"But the best joke of all," whispered the Wind, "was the trick I played on the scandal-monger of the town—a rich old woman who was always listening for tales against her neighbors. I stuck over her door a notice torn from a building site: 'Rubbish may be shot here.'

"They were merry days," sighed the Wind, "but they never put the signboards up again after I got among them. They pretended it was dangerous, but the fact was that I made some of the people so ashamed of themselves that they did not like to be reminded of my merry trick."

With that the Wind ceased to talk down the chimney, and with a whistle blew away out into the open country.

WONDERFUL PROCESSION OF SHOEMAKERS



The chief shoemaker mounted the scaffold, where the signboard was to be put up, to make a speech. But the clown jumped up, and the people roared at his grimaces. Then the Wind joined in the fun and rattled signboards in the street, and the speaker got down, saying, "It is no use trying to talk in this wind."

THE KING WHO COULD NOT SLEEP

THERE was a fierce and warlike young king who seemed to possess everything that the heart of man could wish. He was very rich and very powerful, and he had a great army, which he led from victory to victory. But, in spite of all his wealth and his might, he was the unhappiest man in his kingdom; his restless mind was so full of ambitious schemes that he could not sleep.

He summoned to his court the most famous doctors in the world, but none of them was able to cure him of his malady, and at last he made a proclamation that

"Well, before you try," said the king, "tell me what your remedy is. Some simple thing that your mother taught you, no doubt."

"Yes," she replied. "It is something my mother taught me. Here it is."

And leading the king to an open window, she pointed up to heaven.

"What! You have come to mock me?" said the king.

"No!" said the little shepherdess. "I have come to teach you to pray."

But the king still thought she was mocking him, and growing harsh with



HIS HEART WAS TOUCHED WHEN HE SAW THE INNOCENT CHILD WALKING TO THE DUNGEON he would give half of his kingdom to any person who could make him sleep in a calm and natural manner, but he added that anyone who tried to cure him and failed would be imprisoned.

One evening a pretty shepherdess came to his palace and said that she could heal him. In spite of the anguish he was in, the king looked at her with pitying eyes.

"Return home, my pretty child," he said. "You cannot possibly succeed where all the wisest doctors have failed."

"No! I cannot go away," said the little shepherdess, "until I have done my work—until I have tried to save you."

anger, he called in his soldiers, and ordered them to put the girl in a dark dungeon. Sitting in a chair, he watched in a fierce mood the warders bind the shepherdess in fetters. But his heart was touched when he saw the sweet and innocent child walking to the dungeon with a smile upon her bright and lovely face. He followed her, and saw her kneel down and pray when she entered the prison.

"Kind and loving Father," she said, "teach him to pray to Thee with a humble heart for forgiveness for his sins, so that he may lie down at night with peace and happiness in his soul."

ANCIENT AND MODERN CHURCHES



In the sixth century, St. Kevin, an Irish hermit, built himself a cell in the Vale of Glendalough, in the county of Wicklow. Students gathered round him, and a monastery grew up which became famous as a place of learning. The churches are scattered through the valley, but in an enclosure in the centre of the picture we can see the round tower and the ruins of the cathedral and St. Kevin's church.



This is a picture of the cathedral and part of the pretty town of Queenstown, which is so well known to us as a place of call for trans-Atlantic steamers. The cathedral was begun only about the middle of last century and is still unfinished. Queenstown Harbor is the harbor of the city of Cork, the most important city in the south of Ireland.

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STORIES FROM THE CHINESE

It is the ambition of every family in China to have at least one boy who shall distinguish himself in the examinations through which their public officials are chosen, and Chinese story-books are full of interesting tales of the cleverness and perseverance of studious boys.

THE BIG JAR OF WATER

A LITTLE boy named Kwang, who was very clever because he always paid attention to his lessons and tried to understand everything that came in his way, was playing with some other children, when one of them fell into a large earthenware jar full of water. The vessel was a tall one, and none of the children could reach their comrade, who would certainly have been drowned had it not been for the wisdom of Kwang. He knew that anyone trying to save the boy through the mouth of the jar would not only be unsuccessful, but would probably himself fall in, and be drowned. So Kwang took up a large stone lying on the ground, and throwing it at the earthenware jar with all his might, broke the vessel. The water at once ran out, and the little boy was saved.

THE BALL IN THE HOLLOW POST

IN a little village lived a boy named Yenfoh, who was very bright and clever, and always knew what to do in difficult circumstances. One day, while he was playing at ball with some companions, the ball struck the top of a hollow post, and then fell to the bottom inside, quite out of reach of the children. All of them, with the exception of Yenfoh, thought the ball was lost. But he knew what to do. He ran to the village well and drew a pail of water. Then, bringing this to the hollow post while the other children looked on in wonder, Yenfoh poured the water in, and the ball floated to the top, where it could be reached.

THE BOY WHO FOUND LIGHT

IN the country parts of China the people are very poor—so poor that they are unable to have a light after dark, and simply have to go to bed. A boy named Kang, who was studying for the examinations, found that if he was to succeed he could not waste all the hours of darkness. His family, however, were too poor to buy oil, so what was he to do? A heavy fall of snow had taken place, and Kang suddenly remembered that white reflects light; so going out

and sitting upon the cold ground, he held his book so that the light from the snow shone upon the page. This he did all through the winter. But at last summer came, and at the same time the snow went. What could poor Kang do now? He remembered that glow-worms give a tiny light, and so he collected a large number of these little creatures, and by the light which they gave was able to continue his studies far into the night. Kang became a mandarin of high rank.

THE BOY WHO HAD NO PAPER

A LITTLE boy who had the misfortune to lose his father when he was only four years old wanted to study for the examinations; but his mother lived in great poverty, and was quite unable to buy paper or pen and ink for him. The little boy, whose name was Yang-su, was greatly distressed at this, and for some time did not know what to do. He certainly could not study if he was unable to write, and how could he write if he had no paper? But it was soon proved in the case of Yang-su that where there is a will there is a way. The boy lived near the seashore, and going down to the beach he took with him a branch of a tree, and with it wrote down words and worked out his problems upon the sand.

THE SLEEPY STUDENT

IN the province of Tsu lived a boy who was very anxious to distinguish himself in the examinations, and thus to bring honor to his parents and his native village. But he found that, after he had been studying for some hours, he began to get very drowsy, and his head would nod until finally he fell asleep. This distressed him very much, and for some time he did not know what to do to keep awake. At last he thought of a way of doing this. He tied a cord to the end of his pigtail, and then fastened this to a beam in the roof, so that when he slept and his head began to nod, the pull of the pigtail at once roused him up again.

THE WEB OF CLOTH

MENCIUS was only three years old when he lost his father, but his mother worked very hard so that her son might have a good education. She sent him to school, and at first Mencius liked going; but he soon slackened in his studies, and at last, throwing aside his books, he left the school and went home.

His mother was weaving a piece of cloth into which she had put a great deal of hard work, and which was worth a large sum of money. As soon as she saw Mencius walk into the house, she took up a knife and cut the web of cloth from top to bottom, utterly spoiling it.

"My son," she said, "you are not half so sorry to see me cut this web of cloth as I am to see you leaving your studies."

Mencius was so moved by this action of his mother that he went back to school at once and always studied very hard.

THE HOLE IN THE WALL

A POOR boy named Kwang Hung was very fond of books, and loved to study; but his poverty prevented him from being able to purchase oil for his lamp, and he had no light. He worked

for a magistrate, who at Kwang Hung's request paid him in books instead of money, and no one was ever more delighted with his wages. Yet the books were of little use to the boy, for he was too poor to buy oil for a lamp at night.

At last he thought of an idea. His next-door neighbor had lights, and so Kwang Hung made a little hole in the wall, and by moving his book backwards and forwards in front of the hole he caught the light that came through the hole, and was able to go on with his studies.

When the examinations were held he went up with others, and so distinguished himself that his case was brought before the emperor, who gave him a high appointment, and finally Kwang Hung became Prime Minister of the Chinese Empire.

THE ROSY APPLE

IT was a cold winter afternoon, and snow covered the whole town in a mantle of white. The great cathedral clock tolled five, and a little ragged urchin, cowering in the shelter of the door, gazed up at the big tower, and wondered what the bell must look like. But the cold wind blew so cruelly among his rags that he shrank back into the doorway again, glad of any shelter from the biting cold.

At this moment the great doors were thrown open, and Hans, who was a little German boy, and lived in Strassburg, knew that men and women would now come to the church to pray.

He had often peeped in wonder through the doors, and had seen in the distance the pretty glittering candles, the beautiful figure of the Mother of Jesus, and the white-robed priests kneeling at the altar.

Then, too, he had heard the organ and the voices of the choir, and they never failed to fill him with a great wonderment and a longing to learn more about it all. If only his clothes had been a little less torn he would have dared to venture in, for he had often seen poor people enter the cathedral; but, alas! he was clothed in rags, and he had not even a cap on his head or boots on his feet.

So he stood in the corner by the door, and watched the people pass in, as he had often done before.

Many of the ladies had long fur coats, and nearly all the men had big, warm collars and mufflers. Hans wondered

what it would be like to have thick clothes, and not to feel a little bit cold or hungry. Poor little chap, he could not imagine that, for his limbs ached with cold, and he had scarcely eaten for two days. As he was watching the crowd, a beautiful carriage drew up, and Hans saw a little girl, who was seated in it, look at him, and then turn and speak to a lady who was with her. The lady handed her something from a basket, and then the coachman opened the door and they both stepped out.

Oh, how beautiful they were, and especially the dear little girl! Poor Hans opened his eyes in astonishment, and almost thought that she must be a fairy. Her coat was of pretty white fur, and she had a little cap and muff of the same material. Around her face fell golden curls, and on her little feet and legs she wore white boots and gaiters.

As they came up the steps, Hans saw that in her hands she carried a big, rosy apple; but when they reached the top he could hardly believe what he saw, for the little maid ran up to him, and, holding it out, said:

"Here, little boy, would you like this apple?" And then, before he had time to speak, she ran after the lady, and he was left standing with the apple in his hands!

He was so astonished that he sprang forward and gazed after the two as they went into the cathedral, and there he saw the little girl kneel down by the side of her mother, as the priests began to pray.

THE BOOK OF STORIES

For a long time he stood there, and once more longed with all his little heart to go in and kneel, as he saw others doing.

It was very quiet at the back of the church, and Hans at last ventured just inside the dimly-lighted porch. He stood there a few moments, until he could resist no longer; then he suddenly shot forward and knelt down quickly against one of the chairs. He shut his little eyes and kept quite still, until at last he heard the organ begin to play, and saw that all the people were standing up.

Oh, how he listened and watched as the service went on! And as he heard the

that he had in the world—his next meal and the only thing which had given him pleasure for ever so long. It would be hard to let it go, but he was full of a great longing, and his one fear was whether his offering was good enough.

He hugged it closely to his heart, and grew more and more excited; and then, when the priest at length drew near, he rose from his chair, and, with a frightened, happy sigh, he placed his rosy apple on the big golden plate. He thought with delight how pretty and red it looked among all the coins, and he watched eagerly as the priest carried it away. As



HE COULD HARDLY BELIEVE HIS EYES, FOR SHE RAN UP TO HIM AND HELD OUT THE APPLE beautiful music his heart felt as if it were growing bigger and bigger, and he longed to cry, and yet at the same time he knew that he was strangely happy.

Then he saw that one of the priests was moving about the church with a golden plate in his hand, and as he held it before the people they placed money on it. Poor Hans! How he longed that he might put money on the plate, too! And as he longed an idea came to him—why not give his rosy apple to the good God to whom the priests were praying?

Hans did not know much about God, but he *did* know that his apple was all

he drew near the altar, all the people bowed their heads, while the priest lifted the plate high, and prayed that God would accept the gifts of His people.

Now, as he did this, a wonderful thing happened. The pretty rosy apple, which a moment before had been held so tightly in Hans' little fingers, was turned, as the priest prayed, into pure, shining gold, and into the little boy's heart there swept a big joy that was never to leave it. His face was wreathed with glad smiles, and he was full of happiness. Of all the gifts laid on the plate, the little rosy apple was the greatest in the sight of the great God.

STORIES TOLD TO KAFFIR CHILDREN

The little Kaffir boys and girls who live in the native villages of South Africa do not know any of our fairy tales; they have never heard of Cinderella or Little Red Riding Hood. But in the evening, squatting round the fires that blaze outside their huts, their mothers tell them tales like these stories, and they become silent and attentive.

UNCAMA'S ADVENTURE

UNCAMA was a bold hunter, and finding that a strange animal came every night to his garden and rooted up his plants, he lay in wait for it, and pursued it. The strange animal ran



UNCAMA FOLLOWED IT DOWN THE HOLE

down a great hole by the side of the river, and Uncama followed it, and entered a wonderful country underneath the earth.

The strange animal then disappeared, but Uncama went on until he came to a village in which a tribe of savage dwarfs lived. The dwarfs were very fierce, and gathered together to make an attack; but Uncama got away, and climbed up the hole back to his own country.

But when he returned to his people no one recognized him.

"Where is the wife of Uncama?" he said. "I have a message for her."

"Uncama? Uncama?" exclaimed the people. "Wasn't that the man who disappeared many years ago? His wife is now a very old woman."

So, indeed, she was; and for some time she did not know Uncama. The hunter was now a younger man than even the baby son whom he had left in his wife's arms when he followed the animal down the hole into the underground country.

THE JACKAL AND THE LION

ONE very hot summer all the streams dried up, and the animals had no water to drink. After searching for some days they found a spring, but hardly any

water came from it, as the hole had not been dug deep enough in the earth.

"Let us all set to work and dig out a big hole," said the lion, "so that we can get plenty of water to drink."

The jackal was lazy, and refused to work with the other animals. So, when they had dug the spring out, they said:

"We must now guard our fountain, and keep the jackal from drinking any of our water, since he refused to work."

"I'll watch over it," roared the lion, "and if I set my eyes on that rascal of a jackal, I'll eat him up."

Some time afterwards the jackal came bounding gaily up to the spring. But, instead of trying to drink the water, he sat down near the lion and pulled from a bag a luscious piece of honeycomb.

"You see, Mr. Lion," he said, as he munched the honeycomb, "I am not at all thirsty. This honey is really lovely."



"LET US ALL SET TO WORK," SAID THE LION

"Just give me a taste," said the lion. The jackal gave him a very little bit.

"Oh, it is very good!" said the lion.

"Do give me some more, my friend."

"To get the full flavor," said the

jackal, "you must lie on your back, and let me pour it down your throat."

The lion at once fell on his back, and began to wave his great shaggy paws in delight at the fine feast in store for him.



HE TIED UP THE LION'S PAWS WITH ROPE

"I am afraid you will hurt me with those great paws of yours," said the jackal. "Let me tie them up, and then I can lean over you and pour the honey down safely."

The lion allowed him to tie up his four paws with pieces of strong rope. But instead of giving him any of the honey, the jackal trotted to the spring and drank his fill of the water. As he was merrily running off home, the lion roared out: "Mr. Jackal! Dear Mr. Jackal, don't leave me lying helpless here with my feet tied up. All the other animals will laugh at me, and I shall lose my authority over them. On the honor of a lion, I will let you have as much water as you like if only you will set me free."

The jackal reflected for a few minutes. If he did not unbind the lion someone else would, and the king of beasts then would never rest until he had avenged himself. It was better to trust in his honor. So the jackal set the lion free and gave him some of his honey, and the lion ordered all the other animals to allow the jackal always to drink at the new spring which had been made.

THE JACKAL'S TRICK

AFTER the jackal and the lion became friends they often used to go out hunting together. But, fearing that their friendship would not last very long, the jackal left his den and made a house for his wife and children on the top of a very high rock. This he used to climb up by means of a long rope, which his wife let down for him when he arrived from his travels and gave the necessary signal.

The lion, of course, always took a lion's share of everything that he and the jackal captured. This sometimes made the jackal angry, especially when he discovered the game and tracked it down, and the lion merely came and killed it. And the lion got so lazy that he would not even take the trouble to carry home his share.

"Take all the best parts to my lair," he used to say, "and then you can come back and have the worst parts for yourself."

The jackal resolved to pay the lion out for this. And one day, when they had brought down a splendid lot of game, the jackal took all of it home to his own wife. The next morning the angry lion came to the foot of the rock, and said:

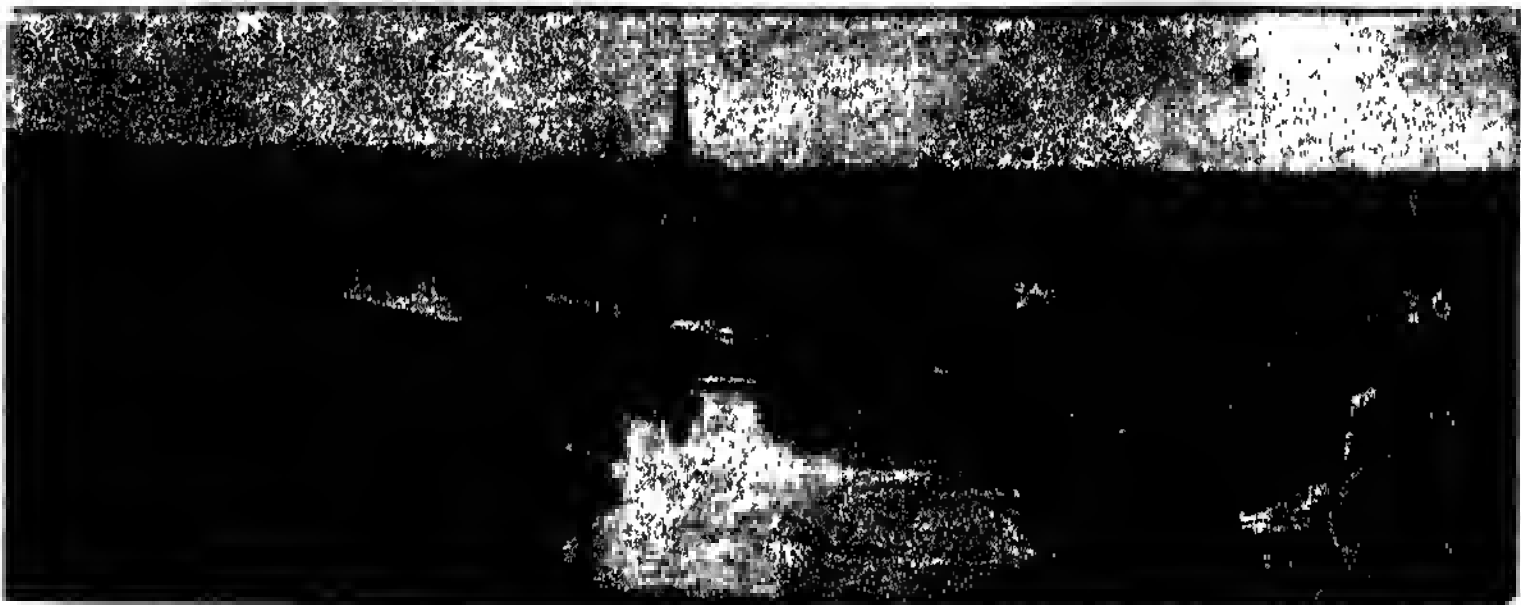
"Just throw down your rope. I want to come up and have a friendly talk."



THE JACKAL BECAME VERY ANGRY

The jackal's wife and children were all very frightened when they heard the lion's voice, and they began to tremble, for they knew their fate if the lion came up. But the cunning jackal had thought out what he would do. Calling out to the lion that he would lower a rope, he let down a piece of weak cord, which broke in the middle just as the lion had got half-way up, and down fell the lion and was killed on the rocks.

The Book of MEN & WOMEN



GREAT WRITERS OF SHAKESPEARE'S TIME

WHEN you go to Italy and visit Turin, you will stand on a hill outside the city—a hill crowned by the burying-place of the Italian kings—and you will see far off, arching you round, a great half-circle of snowy Alps. Here and there the ring of mountains sinks almost to a gap; then rises into a peak; sinks again to a level bank of whiteness; from which, presently, it sweeps up and up into a huge icy pyramid that seems to pierce the very heavens. After that it falls lower for a distance, but rises farther on into quite a cluster of mountain-tops, and so goes circling round, now higher, now lower, though never again so high as the sovereign peak of ice and light.

The risings and declinings of English literature, judged by the best books, resemble that irregular mountain ring, in which distances between the peaks are spaces of time.

Far off this panorama begins, with dimly-seen prominences like the Saxon Caedmon. Then there is a long, low dip representing five hundred years, before the sky-line swells up into the first peak that can be called high, and that is well within our range of sight. That first commanding mountain stands for Chaucer. Now follows another decline, representing two hundred years; but as the range goes on it begins to rise and rise, and, ever rising, climbs at last to the loftiest of all the heights

CONTINUED FROM 5413

of literature—the sky-piercing summit of mankind's thought.

That is Shakespeare.

The length of time to be represented after Shakespeare is only three hundred years, and it has been filled with a glittering cluster of lofty mountain forms, none, however, approaching the height and majesty and grace of the Shakespearian eminence.

Two hundred years after Chaucer had founded modern English book-writing—that is, by the year 1600—our language had attained a glory unsurpassed. How was that rapid and wondrous growth brought about after so many barren centuries?

Glancing broadly over the world's history, we can see there have been periods when the human race has seemed to be worn out, stale, joyless, timid, with no fresh thought bounding towards hope and happiness. And then a period has followed when some part of mankind has been inspired by a new life, and has rushed the old world forward again, thrilling with fine feeling and eager expectation. It was so in the centuries that followed the life of Jesus. It was so in the century before Shakespeare.

Perhaps no age, unless it be our own, has ever been quite so wonderful as that century before Shakespeare. Great changes came to pass almost at the same time, and acted on each

other. The approach of the Turks toward Constantinople drove the ancient learning of Greece and Rome, preserved in Greek and Latin, back to Italy for shelter, and men began to study eagerly the perfect writing of a thousand years before. At the same time printing was invented, and spread swiftly the means and the fashion of study. Immediately afterwards America was discovered, and the energetic began to feel that they were called on to explore not only an old-world history they had forgotten, but a new world for travel, of which they had been unaware. Love of knowledge became a passion.

THE GREAT LOVE OF BOOKS THAT GREW UPON THE PEOPLE

Books were regarded as treasures, and crowds gathered to hear them read. The beautiful English Bible was the sweetest music ever heard on English soil, and the people listened to it gladly, as the precious book was read to them in churches, on the village green, or in the market square. The writings of far-off lands and generations were translated, and the lives of the great men of those days were retold. All the history and the tales that could be gleaned from the past were worked up into plays, and were watched with unflagging delight by people anxious to feel their new thought and hopeful energy. Admiration of the books that had brought thought from other days led men to wish to write books themselves. Delighting in reading, they began to delight in writing, too, and to hope that through their writings their names might be long remembered.

HOW THE WORLD WAS PREPARED FOR THE COMING OF SHAKESPEARE

How extraordinarily the world was prepared for the coming of this great man we may see by examining a few dates. In the writings of Sir Thomas Wyatt, the Earl of Surrey, and others, Italian forms, such as the sonnet, had been adopted, and English verse had been polished and made varied; and these new forms of poetry were available for any one to study, for the first collection of English poems, by many writers, "Tottel's Miscellany," was published seven years before Shakespeare's birth. The best collection of such early poems, the "Paradise of Dainty Devices," was issued when Shakespeare was twelve years old; Hall's Chronicle,

to which he went for parts of his English history, was printed twenty-two years before his birth; Holinshed's Chronicle appeared when he was thirteen; Stow's Annals when he was sixteen; and Plutarch's Lives, from which the poet took much of his ancient history, was translated when he was fifteen. Thus the materials for his work were ready.

It must not be forgotten that, immediately before Shakespeare began to write, another great poet, Edmund Spenser, had brought into English sweet melody, and "all that might delight a dainty ear." His "Shepherd's Calendar," in which were used "almost all the metrical forms with which later poets have made us familiar," was published when Shakespeare was a lad of fifteen. By Spenser and others, verse had been given tunefulness and ease, and English literature was growing into a

"stately tree,
Wherein the merry birds of every sort
Chanted aloud their cheerful harmony,
And made amongst themselves a sweet
consort."

EDMUND SPENSER, THE FIRST GREAT ENGLISH POET AFTER CHAUCER

Edmund Spenser, the first great English poet after Chaucer's time, was born in London, about the year 1552. His father was a cloth worker, and young Edmund commenced his education at the Merchant Taylors School, under a clever man named Richard Mulcaster, the first Englishman who thought it necessary that there should be a training school for teachers. From this school Spenser went to Cambridge University, where he spent the seven years which at that time seem to have been necessary to take a master's degree. Two or three years after he left the university, he went up to London, the goal of every youthful writer, who sought for fame. There he met and gained the friendship of Sir Philip Sidney, a statesman, poet and soldier, and the model of all that was noble and chivalrous in those buoyant days.

Sidney, who became Spenser's loyal friend, introduced him to his uncle, the great Earl of Leicester. Spenser went to court in the train of that powerful nobleman. He entered for a little while into the gay court life, and then, probably through Leicester's influence, he was made secretary to the Lord Deputy of Ireland. Spenser had already begun

HOW THE BIBLE WAS READ TO THE PEOPLE IN SHAKESPEARE'S TIME.



Preaching from the beautiful English version of the Bible at the village cross in Tudor times—From the painting by Mr. G. E. Robertson.

to write poetry, and before he went to Ireland, where he lived for the remainder of his life, he published his "Shepherd's Calendar." In his post of secretary, he proved that a poet could also be a good man of business, and some years later, he was given a more important office in the province of Munster, and received from the queen an estate of three thousand acres and the castle of Kilcolman in the county of Cork. He was not happy in Ireland. He disliked the island and its people, but was somewhat comforted by the occasional companionship of his friend, Sir Walter Raleigh, and occupied his leisure hours in writing. It was at Kilcolman that he wrote the "Faerie Queene," and the tranquil beauty of the country in which he lived seems to have crept into his verses. He paid more than one visit to England, and on one occasion he spent about a year in London; but he returned again to his post in Ireland, and it was there that he met his wife, for whom he wrote the most beautiful of his shorter poems.

The poem by which he is best known is the "Faerie Queene," a tale of enchantment and adventure of which we shall find some stories in another place. The poem is an allegory written in the form of a romance. Under the stories of Una and her lion, St. George and the Dragon, and other persons in the tale, is hidden a picture of the struggle between the virtues and vices. It is a little difficult for us now, but we shall understand as we grow older, and it is enough if at first we read the poem for its story, and for the exquisite music of its verse. It is a book of flitting shadows and the gossamer textures of fancy. Its poetical motion is so soft-footed, and moves so smoothly, as if to the tinkle of elfin bells, that at last it makes us dreamy by its soothing melody. This "poet's poet," as he was called by Charles Lamb, brought unsurpassed grace into our language in the days of its exultant youthful strength. Here is his description of the Bower of Bliss of an enchantress, and its sweet sounds, all harmonized, may serve to illustrate the melody of Spenser's verse, as well as his style and metre.

"Eftsoons they heard a most melodious sound,

Of all that might delight a dainty ear,
Such as at once might not on living ground,
Save in this paradise, be heard elsewhere;

Right hard, it was for wight which did it hear

To rede what manner music that might be;
For all that pleasing is to living ear

Was there consorted in one harmony—
Birds, voices, instruments, winds, waters, all agree!

"The joyous birds, shrouded in cheerful shade,

Their notes unto the voice attempted sweet;

Th' angelical soft trembling voices made

To th' instruments divine response mete;

The silver-sounding instruments did meet

With the bass murmur of the water's fall;

The water's fall, with difference discreet,

Now soft, now loud, unto the wind did call;

The gentle warbling wind low answered to all."

Six books only of the poem were published. It is said that two others were written, but the manuscript was lost when his house was burned during a rebellion in Ireland. Afterward, the poet, who was ruined and broken-hearted, was sent to London, but soon died there, and Ben Jonson said that he died in great poverty, before his friends became aware of his condition. Like Chaucer, he was buried in Westminster Abbey, in what has since become the Poet's Corner.

Shakespeare was a youth of sixteen when Spenser went to live in Ireland, and we do not know that the two men ever met during Spenser's visits to London, but it is probable that Shakespeare knew most, if not all, of the other men of whom we shall read in this story. Spenser, however, probably knew Richard Hakluyt, and even if the two men did not meet, they are certain to have heard of one another from Sir Philip Sidney, for they were both his friends.

RICHARD HAKLUYT, WHO WROTE OF THE ADVENTURES OF HIS TIME

Richard Hakluyt is a man whom we do not often think of among the great writers of Elizabethan times, though it is to him that we owe the best description of the voyages and adventures of those stirring days. He was born, probably in London, about the year 1553, and attended the great school at Westminster. When he was about seventeen he went to Christchurch College in Oxford University, where Sir Philip Sidney had already spent two years, and where the two youths met and became fast friends. Hakluyt, however, stayed on at the university long

GREAT WRITERS OF SHAKESPEARE'S TIME

after Sidney left it. He took the degree of Master of Arts and entered the church.

His great interest for us is in his work in geography, in which he had been interested in his boyhood by his cousin and namesake, another Richard Hakluyt. After he left the university, he began to lecture on geography and wrote a book on the discovery of America. Later on, he was sent to Paris as chaplain to the English ambassador, and while in Paris he learned all that he could about the discoveries made by the French and

Company, and if he had wished to make the adventurous voyage, he would have been the first clergyman in Virginia. He died in 1616, a few months after Shakespeare, and was buried in Westminster Abbey.

THE INFLUENCE OF THE THEATRE IN SHAKESPEARE'S TIME

In the great days of which we are reading, and to which we owe so much, the theatre meant much more than, for instance, the motion picture theatre means in our own. Hearing and seeing plays was



Edmund Spenser was the herald of a great revival in English poetry. In his poems we see the last traces of the English language as it was written by Chaucer, while he has brought the modern English, soon to blossom in Shakespeare's poetry, within sight of perfection. Spenser at one time of his life experienced good fortune and was a friend of many eminent men, although he died in poverty. In the above picture we are shown the poet in his happiest days, reading some pages from his newly written "Faerie Queene" to Sir Walter Raleigh.

Spanish. After his return to England, he devoted most of his time to the study of geography and discoveries. He wrote many books, the greatest of which is "The Principal Navigations, Voiages, Traffiques and Discoveries of the English Nation."

It is said that he knew all the great sea captains and merchants of his time, and if we could have been present at a gathering of his friends, we should probably have met such great men as Francis Drake, the Howards, the Frobishers and Sir Walter Raleigh.

Hakluyt's influence had much to do with the settlements by the Virginia

not only the recreation of the people; it was what the reading of newspapers and histories, and fiction is to us. The music of the Bible and of the Book of Common Prayer had made the people used to stately and beautiful language, and they listened gladly and with understanding to the lines written by the great dramatic poets.

Spenser, who was not a dramatic poet, never wrote a play, and when he first began to write, the stage did not offer much inducement to a man of his genius and ambition. It was not until he was a young man of about twenty-four, about to leave the university, and Shakespeare

a boy of twelve, "with shining morning face, creeping like snail unwillingly to school," that the first theatre was opened in London. It soon became fashionable, however, and before long, good writers turned their attention to preparing plays for the enjoyment of the gay world of London.

We know the names of several of these writers, but we have time in this story for only the most noted. Of these, the man who comes next in importance to Shakespeare is Christopher Marlowe. Shakespeare owed more to him than to any other man of his time, and the poet Milton also owed Marlowe a great deal.

CHRISTOPHER MARLOWE, FROM WHOM SHAKESPEARE LEARNED MUCH

Christopher, or Kit, Marlowe, who has been called the father of English tragedy, was born the same year as Shakespeare, in Canterbury, where his father was a shoe maker. When he was a boy he went to the King's School in Canterbury, and from that school went with a scholarship to Cambridge University, which the poet Spenser had left just a few years before. After he took his Master's degree, Marlowe went to London, where Shakespeare was making a name for himself as an actor.

In London, he made friends with Sir Walter Raleigh and some of the other well-known scholars and writers of the time. We really know little, however, about the years that he spent there, except that he must have given much of his time to writing plays and poems, and that, because of some of his opinions, he got into trouble with the authorities. In the summer of 1593, he got into a street-row, which was not infrequent in those days. He was fatally injured in the fight, and the man who was one of the great English poets came to a tragic end in his thirtieth year.

His fame has been overshadowed by Shakespeare and Spenser, and his life was cut short before he had shown all that he really could do. Nevertheless, we must count Marlowe among the greatest English dramatists, more especially because no good plays had been written before his time, and he had no one to show him the way. He wrote a great deal of sweet poetry, and a number of historical tragedies. In these tragedies he adopted the use of blank verse, about which we may read on page 102. Ever since his time,

blank verse has been used for dramatic and epic poetry, but we must remember that it was Marlowe who first made it smooth, and fitted it to the beauty and dignity of the English language. His plays often rise to grandeur, and though they are now never acted on the stage, the best of them are counted among the treasures of our great literature. Shakespeare worked with him at first, and learned from him, and it is believed that Marlowe wrote part of Henry VI.

Marlowe's example, in writing plays for the London stage, was followed by an old writer named Robert Greene. Like Marlowe and Spenser, Greene was a graduate of Cambridge University, which he entered the year before Spenser took his degree, and it is just possible that the two men may have met there. After he left the university, he went to London, where he occupied himself in writing. Although he wrote some plays, he is chiefly remembered as a bitter critic and as the writer of stories which are still read by students of life in Tudor times. Through his own fault, Greene had a very unhappy life, and died in great poverty, in his thirty-second year.

MICHAEL DRAYTON, ONE OF SHAKESPEARE'S FRIENDS

A man of whom we can think with greater pleasure is Michael Drayton. He is chiefly famous for his historical poems and ballads, one of which—"The Battle of Agincourt"—you may read in the Book of Poetry. Drayton, who had been page in a great family in his youth, was a favorite at Elizabeth's court. His chief interest for us is the fact that he was probably one of Shakespeare's friends and was certainly a friend of Ben Jonson.

FRANCIS BACON, A GREAT WRITER AND PHILOSOPHER

Another writer of Shakespeare's time whom we must mention, although he was not a poet, is Francis Bacon, who was born in 1560, in London. He went to Cambridge University when he was only twelve years old, and spent three years there. Though he left the university without taking a degree, he was a deep student, and became a great lawyer, a statesman, and a great philosopher, and aimed at making himself master of all knowledge, because, as he said, he thought himself born "to be of advantage to mankind." In 1618, he was made lord chancellor by James I, but a few years

after he was accused of taking bribes. He admitted that he had received gifts from suitors in his court, and was dismissed from his high office and disgraced. Then he went down to his home in the country, and went on with the search after knowledge, which was the real love of his life, and also the cause of his death. He believed that food could be preserved by cold, and one day, when out driving, he stopped his carriage to buy a fowl and stuff it with snow. But he was by this time an old man and not strong, and standing in the snow, he got a chill from the effects of which he did not recover, and died on the 9th of April, 1626.

During his life he wrote many learned books on law, and on philosophy. The books by which he is best known are his Essays, and a philosophical work which he called "Novum Organum," or "A New Method," because he believed he had found a new way of teaching science.

BEAUMONT AND FLETCHER, THEIR FRIENDSHIP AND THEIR PLAYS

Beaumont and Fletcher, who are always spoken of together, were two dramatists who wrote plays together. John Fletcher was the son of a bishop of London, and Francis Beaumont the son of a judge. Each of the poets entered the university at the age of twelve, but Fletcher went to Cambridge, and Beaumont attended Oxford University.

When Fletcher was about sixteen, his father died, leaving his family in great poverty. The boy had to set out to seek his fortune and we know nothing of his life for the next eleven years. It is supposed that he went to London to gain a living by writing. Beaumont, who was about nine years younger than Fletcher, left Oxford, without graduating, to study law in London. Literature, however, had greater attractions for him than law, and in time he too turned to writing. It is thought that Ben Jonson introduced the two poets to each other about the year 1606. Their friendship became as close and beautiful as the friendship of David and Jonathan, and they wrote plays together until Beaumont died about two months before Shakespeare's death. Fletcher died of the plague in 1625.

The plays written by the friends are very fine. It is said that in their own day they were performed oftener than Shakespeare's, but they are not so well suited to our times as the plays written

by that greatest of all the world's great poets.

"O RARE BEN JONSON," LAST OF THE POETS OF SHAKESPEARE'S TIME

Ben Jonson, who bridged the gap between Shakespeare and Milton, had a longer and more adventurous life than any of the other writers of whom we have been reading. He was born in Westminster, in 1573, and as his father died about the same time, he was an orphan from his birth. His mother married again, however, and his stepfather sent him to a good school for boys. From this school he was taken to Westminster School, at the expense of William Camden, a learned scholar, who was one of its masters, and at Westminster he gained not only a sound education, but the habit of study, which made him one of the most learned writers of his day. After he left school, he was sent to learn bricklaying, his stepfather's trade, but soon grew tired of that and went as a soldier to the Netherlands to help to fight against Philip of Spain. After a time he returned to England, and became an actor. Like Shakespeare, he soon began to revise some of the old plays, in which he acted, and before long began to write new ones himself. His genius was not so great as Shakespeare's or even Marlowe's, but he was one of the important writers of his day, and his plays were acted for a long time.

He was rather a quarrelsome man, and was imprisoned once for killing another man in a duel. Later in his life, he was again put in prison on account of something he had written in a play, and once he went to prison with some friends, who had been sent there for something said in a play that he perhaps helped to write. In this he showed both generosity and bravery, for he believed that he ran the risk of having his ears cut off.

He perfected in English the form of entertainment called a masque, which had been introduced from Italy, and of which we may read in the story of Milton. He wrote a number of these masques, as well as comedies, tragedies and many other poems of great beauty and sweetness. He outlived his friend Shakespeare by twenty years, and when he died in 1637 he was buried in Westminster Abbey, where his tomb has the inscription "O, Rare Ben Jonson." He was the last of the great poets of Shakespeare's time.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5579.

THE MAKERS OF THE FLAG*

THIS morning, as I passed into the Land Office, The Flag dropped me a most cordial salutation, and from its rippling folds I heard it say: "Good morning, Mr. Flag Maker."

"I beg your pardon, Old Glory," I said, "aren't you mistaken? I am not the President of the United States, nor a member of Congress, nor even a general in the army. I am only a government clerk."

"I greet you again, Mr. Flag Maker," replied the gay voice; "I know you well. You are the man who worked in the swelter of yesterday straightening out the tangle of that farmer's homestead in Idaho, or perhaps you found the mistake in that Indian contract in Oklahoma, or helped to clear that patent for the hopeful inventor in New York, or pushed the opening of that new ditch in Colorado, or made that mine in Illinois more safe, or brought relief to the old soldier in Wyoming. No matter; whichever one of these beneficent individuals you may happen to be, I give you greeting, Mr. Flag Maker."

I was about to pass on, when The Flag stopped me with these words:

"Yesterday the President spoke a word that made happier the future of ten million peons in Mexico; but that act looms no larger on the flag than the struggle which the boy in Georgia is making to win the Corn Club prize this summer."

"Yesterday the Congress spoke a word which will open the door of Alaska; but a mother in Michigan worked from sunrise until far into the night to give her boy an education. She, too, is making the flag."

"Yesterday we made a new law to prevent financial panics, and yesterday, maybe, a school teacher in Ohio taught his first letters to a boy who will one day write a song that will give cheer to the millions of our race. We are all making the flag."

"But," I said impatiently, "these people were only working!"

Then came a great shout from The Flag:

"The work that we do is the making of the flag."

"I am not the flag; not at all. I am but its shadow."

"I am whatever you make me; nothing more."

"I am your belief in yourself, your dream of what a people may become."

"I live a changing life, a life of moods and passions, of heart-breaks and tired muscles."

"Sometimes I am strong with pride, when men do an honest work, fitting the rails together truly."

"Sometimes I droop, for then purpose has gone from me, and cynically I play the coward."

"Sometimes I am loud, garish, and full of that ego that blasts judgment."

"But always I am all that you hope to be and have the courage to try for."

"I am song and fear, struggle and panic, and ennobling hope."

"I am the day's work of the weakest men and the largest dream of the most daring."

"I am the Constitution and the courts, statutes and the statute-makers, soldier and dreadnought, drayman and street sweep, cook, counselor, and clerk."

"I am the battle of yesterday and the mistake of to-morrow."

"I am the mystery of the men who do without knowing why."

"I am the clutch of an idea and the reasoned purpose of resolution."

"I am no more than what you believe me to be and I am all that you believe I can be."

"I am what you make me; nothing more."

"I swing before your eyes as a bright gleam of color, a symbol of yourself, the pictured suggestion of that big thing which makes this nation. My stars and my stripes are your dream and your labors. They are bright with cheer, brilliant with courage, firm with faith, because you have made them so out of your hearts; for you are the makers of the flag, and it is well that you glory in the making."

* Delivered by Franklin K. Lane, Secretary of the Interior, on Flag Day, 1914, before the employees of the Department of the Interior, Washington, D. C.

By special permission of the Secretary.

The Book of THE UNITED STATES



The Aviation Squad of the New York Police Department.

THE STORY OF THE AMERICAN FLAG

LONG before men had learned to build houses and churches and cities, and long before they knew anything about how to manufacture the bunting and silk of which our flags are made to-day, they used the skins of animals fastened to a long pole to show the tribe or band to which they belonged, and to signal to one another. Men traveling long distances through the forest knew by this whether they were in the presence of friends or foes.

This was perhaps the first use of a flag. When you go to a football or baseball game between two great universities or colleges, you know at once by the flags and colors displayed by each team to which side they belong, and when the game is won the winning team rejoices more over the honor to its college and its flag than because of any honor or gain to themselves. When the President is cruising or traveling in his yacht, the *Mayflower*, we know, even at a long distance, that it is the President's yacht, because it flies his ensign from the mainmast. Important work of the army and navy is done by the Signal Corps with a system of flag signals called wigwagging. The Boy Scouts and Camp Fire Girls know how to talk

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to each other in this way. Different flags tell us many different kinds of things, but there is one flag which always tells us the same thing, and that is *the flag of our country*.

Every boy and girl who goes to school in America knows what the "Stars and Stripes," the flag of the United States, means, and what it stands for. It means so much to us that no one in our presence can say a word against it which we do not resent; it means so much that we are willing to fight for it, if necessary, or to die for it, if need be, rather than to see it lie in the dust, or to see any other flag put in its place. It means the *freedom* to do what we believe to be right, no matter what any one else may say or think; and whenever and wherever we see the flag we are proud to remember that we are living in a country which is called by all nations *the land of the free*.

But there are other thoughts which come to us when we see the splendid colors of our flag, the red, white and blue, streaming in the wind. "Red is for courage, zeal, fervency; white is for purity, cleanness of life, and rectitude of conduct; blue is for loyalty, devotion, friendship, justice, and truth.

The star is an ancient symbol of India, Persia and Egypt, and signifies dominion and sovereignty." Even the tassels which hang from it and the fringe which surrounds it have a meaning, for they are symbols of a very early religious rite, and the colors were first used by the Christian Church. But most of all when we see the flag we think of what the men and women of the past have done to uphold its honor and glory and we vow in our hearts that they shall never grow less.

THE FIRST BIRTHDAY OF THE AMERICAN FLAG

When you read the story of your country, you are also reading the story of your flag. You will find on page 993 of this work how the thirteen British Colonies revolted from the Mother Country and became the Thirteen Original States of the United States of America. The first truly American flag was called the "Congress Colors." This ensign was composed of thirteen equal stripes, alternately red and white in color, to signify the Thirteen Original Colonies, and in the upper left hand corner was a small Union Jack, the flag of Great Britain, which showed that the colonies still felt their union with the Mother Country, whose children they were, but children who had grown up into an independence which could not be suppressed by the edicts of an unjust king.

THE ENGLISH FLAG, THE FLAG OF THE COLONIES

The ancient national flag of England was the cross of St. George in red on a white banner. In 1606 it was united with the cross of St. Andrew in "the king's colors." This was the "Union" of Scotland and England, which was not finally established until 1707, and this flag was in use after that period. When Ireland came into the kingdom the cross of St. Patrick was added, in 1801.

Since the United States entered the Great War you have seen the British flag many times. Before that great event it was seldom displayed. The perpendicular red cross is that of St. George, the diagonal white cross that of St. Andrew, and the diagonal red cross that of St. Patrick. The arrangement of the last two shows that they are two crosses and not a red cross on a white ground. These three crosses are called the "Union Jack," though the name is not correct except when flown on a warship.

Although the colonies used the flag of England for one hundred and fifty years, the present "union" was not used by any of the American colonies. In the earliest days of the Revolution each state had its own particular banner, but after the battles of Lexington and Bunker Hill, the Connecticut troops raised the standard showing the arms of that colony. It is said that a flag was unfurled at Bunker Hill bearing the motto, "Come if you dare." In Trumbull's celebrated picture the flag is red, having a white canton with a red cross and a green pine tree. A month after this battle a flag was adopted by Major-General Putnam, bearing on one side the motto, "An appeal to Heaven," and upon the other side a Latin motto, "Qui transtulit sustinet," which means "God, who has brought us here, will sustain us."

THE FIRST FLAG OF AMERICA

The first flag of America, also called the Grand Union Flag, was flown for the first time, December 3, 1775, from the stern of Commodore Hopkins' flagship, the Alfred, one of eight vessels built by the Continental Congress. John Paul Jones, America's greatest naval hero, at that time senior lieutenant, raised the flag with his own hands. Perhaps it was at that proud moment that he exclaimed, "That Flag and I are twins. We cannot be parted in life or in death. So long as we can float, we shall float together; if we must sink, we shall go down as one." From the mast of the ship Commodore Hopkins hoisted a flag of yellow silk with a coiled rattlesnake and the warning, "Don't Tread on Me." This was called the Gadsden flag because it was presented to Congress by Christopher Gadsden, a delegate to the Continental Congress from South Carolina.

Another rattlesnake flag is described by an English writer: "A separate flag has lately appeared in our seas bearing a pine tree with the portraiture of a rattlesnake coiled up at its roots with this daring motto: 'Don't tread on me.' We learn that vessels bearing this flag have a sort of commission from a society of people at Philadelphia, calling themselves The Continental Congress." This was a Massachusetts flag, and was flown by the vessels of the navy of that state. At least three other flags showing a rattlesnake were used about that time.

THE FIRST FLAG RESOLUTION

On a wonderful day for the Continental Army, January 2, 1776, the "Congress Colors" was raised in Cambridge, Mass., and was used as the standard of the Colonies until replaced by the "Star-Spangled Banner," which differed from it by having in place of the combined crosses a circle of thirteen white stars on a dark blue field. On the first real birthday of the Stars and Stripes, June 14, 1777, the Continental Congress passed the following resolution:

"Resolved: That the flag of the thirteen United States be thirteen stripes alternate red and white; that the union be thirteen stars, white in a blue field, representing a new constellation."

It was just at this time that Paul Jones was placed in command of the *Ranger*, and received his commission to bear to France the news of the surrender of Burgoyne. The flag which was flown from the staff of the vessel was made with great excitement and rejoicing, by a group of the girls of Portsmouth, out of their silken gowns. When the little fleet arrived in French waters Admiral La Motte Picquet gave this flag the salute which France accorded to all other republics, which was the first recognition of American independence by any foreign power.

THE MAKERS OF THE FIRST AMERICAN FLAGS

There are many stories as to who was the designer of the first American flag, in which the names of Francis Hopkinson and Captain Paul Jones are mentioned. A commission of three was appointed, consisting of General Washington, Robert Morris and Colonel Ross, to decide upon our national flag. We are told that they consulted with Mistress Ross, a flagmaker who lived in Philadelphia, and that benefiting by her suggestions, the flag was made from a drawing handed to her by General Washington. The story of Mrs. Betsy Ross is interesting. It is said that she suggested making the stars with five points instead of six, and that she made all the flags for a time. Some students of history do not think that the story is proved, though many people believe all of it.

An interesting account of the making of the first flag, about which there is no doubt, tells of an attack on Fort Stanwix

(later Fort Schuyler, Rome, N. Y.) made by British, August 3, 1777. Two hundred men of the Massachusetts Regiment sent forward to reinforce the garrison brought word of the "flag resolution," and immediately a flag was made, from soldiers' white shirts, the red petticoat of a soldier's wife, and the blue cloak of Captain Abraham Swartwout. This is the first occasion when the Stars and Stripes were fired upon.

WHERE THE IDEA OF THE FLAG CAME FROM

It is not known whether the stars were borrowed from the flag of Rhode Island, or whether the idea was borrowed from the Netherlands. It is natural to suppose that our forefathers may have been influenced by the flag of Holland, to whom they were so much indebted, and it is also quite possible that the stripes and stars upon Washington's own coat of arms may have suggested the stars and stripes of our flag. But the arrangement, in the Navy, was that of the Rhode Island flag, as the thirteen stars were placed so as to form the crosses of St. George and St. Andrew. Beyond a doubt the thirteen stars were unfurled at the Battle of Brandywine; they saw the surrender of Burgoyne; they helped to cheer the patriots in their sufferings around the camp fires at Valley Forge, and they waved triumphant at the surrender of Cornwallis at Yorktown. They looked down on the evacuation of New York and became a part of the glorious later days of the Revolution.

It does not really make much difference where the idea of the flag came from. The stripes were used, as we have seen, long before the stars were adopted, and the stars were on the Rhode Island flag. Perhaps the idea came from Washington's coat of arms, but it seems more likely that the flag simply grew, and that no one person is really responsible.

THE LAST FLAG RESOLUTION

When the new states, Vermont and Kentucky, entered the Union, two new stars and stripes were added to the Flag by act of Congress, to take effect May 1, 1795. The circle was replaced by five stars in three parallel rows. This was the flag which was flying over Fort McHenry at Baltimore twenty years later when the British bombarded it, September 14, 1814. The states admitted after

Kentucky seem not to have been placed upon the flag, and they demanded that they be given a place also.

It was soon discovered that the addition of a new star and stripe for each new state which entered the Union would make the flag too large and awkward, and on April 4, 1818, Congress enacted that the stripes in the flag should be always thirteen in memory of the Thirteen Original Colonies, and that each new state should be represented by a new star added to the Flag on the Fourth of July following the admission of the state to the Union. At the time of the Revolution the Flag had thirteen stars; of the Mexican War, twenty-nine; of the Civil War, thirty-five; of the Spanish-American War, forty-five; and the number to-day is forty-eight.

Each state has its own flag, showing the arms of the state, and it was the state colors under which our troops fought during the Revolution. It was not until the war with Mexico in 1846 that our national standard was regularly carried into battle. Some of the state flags are very attractive, though many are very much alike. Twenty or more states use the seal of the state on a blue ground as their state flag. Unless one looks very clearly it is difficult to tell them apart. Other states use different colors as a background, and still others have different arrangements of stars, stripes and devices. You should know your own state flag.

THE NAMES BY WHICH OUR FLAG IS CALLED

There should not be a child anywhere in the United States who does not know how and when our national song, which gave the name to our flag, The Star-Spangled Banner, came to be written. Francis Scott Key, a statesman and attorney of Maryland, living in Baltimore at the time the British bombarded Fort McHenry, was asked by President Madison to secure the release of a certain Doctor Beans, who was being held on unjust charges. He went on board the *Minden* for this purpose, and was held overnight during the bombardment. In the morning, when he saw the flag was still flying, inspired by the intense feelings of that hour, he wrote the first draft of our national song. Day and night the Star-Spangled Banner still floats over his grave in silent majesty.

But the name which we love best for

our flag is Old Glory, and the man who gave this name was Captain Stephen Driver, who was in command of the *Charles Doggett*, sailing from the port of Salem, Mass. No man loved the flag of the Union more than Captain Driver, and when he first sent it aloft, he christened it "Old Glory," which he called it ever after, so that he came to be spoken of as "Old Glory Driver." During the Civil War this flag was the object of search on the part of his neighbors, and in order to keep it safe the Captain quilted it with his own hands into his bed-comforter. After his death in 1886 it was presented to the Essex Institute of Salem, the same port from which it sailed away so proudly in 1831.

THE USE OF THE COLORS AND THE STANDARDS

The infantry carries the colors and the cavalry the standards. It is easy to see why the mounted troops have the smaller flags, without the cords and tassels which would hamper the men who bear them in going into action. If you have ever been to West Point to see that wonderful review of the cadets, you will remember how the colors are escorted to and from the field by a special color guard. "The Star-Spangled Banner" is played at the raising and lowering of the colors, morning and night. When not in use they are kept at the quarters of the colonel, and when in camp are set up in front of the colonel's tent—the national color or standard on the right. Each regiment has both a national and regimental silk standard or color, and a battalion or squadron has in addition the same flag made of bunting, of a larger size.

A special ceremony is always made of lowering the flag at a military post or in camp. The flag is lowered slowly while the band plays, and all present must stand rigid and show the proper respect until it is gathered up. The flag must not touch the ground as it reaches the bottom of the staff.

Our flag is the oldest national flag in existence. It is older than the flag of Great Britain, adopted in 1801, than the flag of Spain, 1785, than the French tricolor, 1794, than the flag of Portugal, established in 1830, than the flag of the German Empire, 1870. It is older than the Swedish-Norwegian ensign; or the recent flags of the old empires of China and Japan, or the flags of South America.

THE YOUNG CITIZEN AND HIS FLAG

YOU have many times seen the flag of your country hanging from its staff or waving proudly in the breeze. You say that it is your flag, but have you ever stopped to think what it means? Your country's flag! Do you think of it simply as a bit of colored cloth, or do you have for it a deep devotion which you cannot find words to express? Perhaps you have never thought of it at all.

The flag of your country stands for the country itself. We say that the "Stars and Stripes," if you live in the United States, or the Union Jack if you live in Canada, is the symbol of the nation to which you belong. All those who have gone before have helped to make the nation what it is, and hence have helped to make the flag. To the Canadian boys it stands for the whole story of Great Britain, for Wolfe, for the men who made the Dominion, for the brave soldiers who have gone across the seas.

WHAT DOES THE FLAG OF THE UNITED STATES STAND FOR?

The flag of the United States stands for the first settlers who left their homes and came across the seas. It stands for the hardships of Jamestown and Plymouth; it stands for the hardy pioneers who climbed the Alleghanies and began to conquer the boundless West; it stands for the Declaration of Independence; it stands for Concord and Lexington, Valley Forge and Yorktown; it stands for all those who died to make this land free. All the blood and treasure which have been poured out to make this a land of liberty and opportunity are a part of this flag.

The flag means the nation which guards and protects you. Perhaps you have never thought that you have anything to do with the nation. Perhaps it always seemed far away. The policemen, the firemen, and the street cleaners, you see almost every day, and you may have thought of them as all of the government. They are a part of the city or town, but they are not all, even of that. The city, the town and the county are parts of the state, and the state is a part of the nation, and the nation means more than a few officers. The nation means all those we have already mentioned, and more even than the people who have gone before.

WHAT DO WE REALLY MEAN BY THE NATION?

The nation is all the people of your country acting together. It is not something far above you, which you must obey, and with which you have nothing to do. The nation is you, your father and your mother, the people around you, and the people far away, who live under the flag and love it. All these make up the nation as it is to-day, and it is what it is because of them and because of those who have gone before.

Have you ever thought how impossible it would be for you to live alone, how difficult and inconvenient it would be if your own family lived apart from every one else? You would have to do without most of the things which make life pleasant. Your family could not build roads and bridges, could not keep up schools, and could not protect itself from any wicked men, who might roam through the land, or might come from afar. Only all the people can do that, and we call them, acting together, the nation.

For you policemen walk the streets, firemen are always ready to save you, doctors are trying to make the land healthful, brave soldiers and sailors are guarding the coasts. Thousands of men, and women, too, are working for you, and other young citizens like you, working to make this world a better place for you to live in, working to give you a better opportunity to grow up strong, healthy and wise.

WHY THE AMERICAN FLAG MEANS SO MUCH

All of these are a part of what the flag means. It is a flag which floats over a free nation, where the will of the citizens is the law of the land. In some countries the flag is the flag of a few who enjoy the good things of life, while the great majority must live without opportunity. Here the poorest boy may rise to the highest position in the nation. No law will keep him down. No law will interfere with his religion. No one will decide where he must work, and what he must do. The long arm of the government will protect him while he is doing right.

The flag of the United States has brought hope to those who were oppressed. Under that flag, men went forth to free Cuba from tyranny, and

then to free the world from dread. Under it the Filipino, the Hawaiian, the Porto Rican are able to live secure, and the flag will protect you if it takes the whole strength of the nation to drive off those who strive to oppress you.

RIGHTS, PRIVILEGES AND DUTIES ARE ALL CONNECTED

Now every right or privilege carries a duty with it. You say that you have a right to walk along the street without harm, that you have a right to the cap on your head. This is true, but have you ever thought that if it is your right to walk in peace, it is your duty not to interfere with another? If it is your right not to have your cap snatched from you, it is your duty not to snatch the cap of any one else. If a schoolmate allows you to look at one of his books, it is your duty not to tear or deface it. The other side of every right or privilege is a duty, and one who is always demanding his rights, and never thinks of his duties, is either stupid or selfish.

Boys and girls do not always understand this fact, which is at the bottom of all society. They desire every good thing of life, and expect it to come to them, but they forget that they must give in return. They expect their parents, the city, the state, to give them many things, and never think that they owe something to all of these. One who always takes and never gives is not an admirable person. You despise such a boy or girl, if you are unfortunate enough to know one of this sort.

HOW YOU CAN SHOW YOUR LOVE FOR THE FLAG

Then if the nation protects and guards you, it is your duty to conduct yourself properly. Every time you do what you know is wrong, you are dragging the flag of your country in the dust. You are being ungrateful to the nation of which you are a part. By just a little bit you are lowering the standard of the whole nation. You are making the United States just a little worse. You are making it harder for the nation to do the work it must do.

Not doing wrong is not enough. A stump does not do anything that is wrong, but it is not likely to do much that is good, either. A citizen who loves his nation must be on the lookout to do good, and not simply to keep from doing wrong. He must be active all the time

and try to make himself more worthy than he was the year before, or even the week before. If you are to be worthy of the flag you must be a good citizen, and a good citizen is not one who sits still and does nothing. Every one who does not help, hinders, for he is simply a dead load, which those who are trying to carry the nation forward must lift. By lifting, instead of leaning, you can show your love for the flag.

You may say that one person in a hundred million does not matter. This is a very foolish statement. The nation is made up of a hundred million people, to be sure, and many of them are boys and girls like you. If every boy or girl had the same ideas and grew up into a selfish, lazy man or woman, what kind of a nation would we have? How long would the United States be one of the leading nations of the world? Soon the world would learn to know that nothing high or noble was to be expected from the United States. It would be a dead nation, with no right to exist upon the earth.

HOW YOU SHOULD BEHAVE TOWARD THE FLAG

Besides showing your love for the flag by your conduct, there are other things you can do. Never fail to salute your country's flag when it is carried past you in a procession, and you can remind any one you see, who is neglecting to take off his hat, that the flag is there. You can take care of the flag at your own home. Do not allow it to get soiled or torn, and never allow it to trail in the dirt. Never place anything on the flag, and never allow any one else to show disrespect for the flag, if you can help it. Be polite, of course, but protest vigorously if any one is abusing it. Tell the person who is doing this, some of the things we have told you here. Perhaps he or she is only thoughtless and does not really mean to show disrespect. Few people would be willing to do this if they only thought a moment.

Think of your flag as the symbol of your nation. Show reverence for the flag, because it represents the nation, which has done so much for you and the world. Then when you grow up, and can have a voice in the nation's affairs, you will, I am sure, be a good citizen. In the United States there can be no higher title of honor than this.

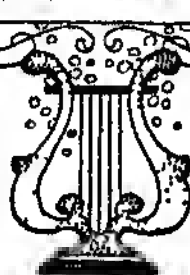
THE NEXT STORY OF THE UNITED STATES IS ON PAGE 5593.

ON SIR PHILIP SIDNEY

SIR PHILIP SIDNEY, who was born in 1554 and died in 1586, from the result of a wound received while fighting in the Netherlands, was one of the most beautiful characters of his time. Although we know him as one of the finest poets of the Elizabethan period, none of his poems was printed during his lifetime, and the fame which he enjoyed in his own day was largely due to his personal character. Whenever we wish to think of a true hero and a Christian gentleman, the name of Sir Philip Sidney is the one that comes most readily to mind. Sir Fulke-Greville was a fellow-poet and comrade of his. He wrote the life of his friend, which was printed in 1652. He was also the author of this poem, in which he so beautifully celebrates the virtues of Sidney.

SILENCE augmenteth
grief, writing in-
crease the rage,
Stal'd are my thoughts,
which loved and lost, the wonder
of our age;
Yet quickened now with fire, though
dead with frost ere now,
Enraged I write I know not what;
dead quick, I know not how.

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Farewell to you, my
hopes, my wonted
waking dreams!
Farewell sometime en-
joyed joy eclipsed are thy
beams!
Farewell, self-pleas-; thoughts, which
quietness brings forth,
And farewell friendship's sacred league
uniting minds of worth.

Hard-hearted minds relent, and Rigour's
tears abound,
And Envy strangely rues his end, in
whom no fault she found;
Knowledge his light hath lost, Valour
hath slain her knight:
Sidney is dead, dead is my friend, dead
is the world's delight.

And farewell, merry heart, the gift of
guiltless minds,
And all sports, which for life's restore,
variety assigns,
Let all that sweet is, void! In me no
mirth may dwell,
Philip the cause of all this woe, my life's
content, farewell!

Place pensive wails his fall, whose presence
was her pride;
Time crieth out, my ebb is come, his life
was my springtide;
Fame mourns in that she lost, the ground
of her reports,
Each living wight laments his lack, and
all in sundry sorts.

Nor rime, the scourge of rage, which art
no kin to skill,
And endless grief which deadens my life,
yet knows not how to kill,
Go seek that hapless tomb, which if ye
hap to find,
Salute the stones, that keep the lines, that
held so good a mind.

He was—woe worth that word—to each
well-thinking mind,
A spotless friend, a matchless man, whose
virtue ever shined,
Declaring in his thoughts, his life, and
that he writ,
Highest conceits, longest forsooths, and
deepest works of wit.

Now sink of sorrow I, who live, the more
the wrong,
Who wishing death, whom death denies,
whose thread is all too long,
Who tied to wretched life, who look for
no relief,
Must spend my ever-dying days in never-
ending grief.

He only like himself, was second unto
none,
Where death—though life—we rue, and
wrong, and all in vain do moan,
Their loss, not him wail they, that fill the
world with cries,
Death slew not him, but he made death
his ladder to the skies.

Heart's ease and only I, like parallels run
on,
Whose equal length, keep equal breadth,
and never meet in one,
Yet for not wronging him, my thoughts,
my sorrows cell,
Shall not run out, though leak they will,
for liking him so well.

ONLY A BOY

It cannot truly be said that these lines are "poetry." They are poetic in form, they rhyme, but they lack rhythm or beauty of movement. Their merit is that they give a quick and happy outline of a good healthy type of boyhood.

ONLY a boy, with his noise and fun,
The veriest mystery under the sun;
As brimful of mischief, and wit and glee,
As ever a human frame can be,
And as hard to manage as—what? ah, me!
'Tis hard to tell,
Yet we loved him well.

Only a boy with his fearful tread,
Who cannot be driven, must be led.
Who troubles the neighbour's dogs and cats,
And tears more clothes, and spoils more hats,
Loses more kites, and tops, and bats,
Than would stock a store
For a year or more.

Only a boy, with his wild, strange ways,
With his idle hours, or his busy days,
With his queer remarks and his odd replies,
Sometimes foolish and sometimes wise.
Often brilliant for one of his size,
As a meteor hurled
From the planet world.

Only a boy, who will be a man,
If Nature goes on with her first great plan—
If intemperance, or some fatal snare,
Conspire not to rob us of this our heir,
Our blessing, our trouble, our rest, our care,
Our torment, our joy!
Only a boy.

THE BAILIFF'S DAUGHTER

Here we have a well-known and typical old English ballad. The story it tells is of the simplest, for in the days when ballads were popular, people were more simple-minded than they are in our time. It is a quaint and unlikely story, but its simplicity has a charm for us readers of a later day. It is difficult to imagine that the London apprentice let seven long years go by without seeing his sweetheart at Islington! But we must not expect common-sense views of life from these old ballads, which were meant only to entertain.

THERE was a youth, a well-beloved youth,
And he was a squire's son,
He loved the bailiff's daughter dear
That lived in Islington.

Yet she was coy and would not believe
That he did love her so,
No, nor at any time would she
Any countenance to him show.

But when his friends did understand
His fond and foolish mind,
They sent him up to fair London
An apprentice for to bind.

And when he had been seven long years,
And never his love could see:
Many a tear have I shed for her sake,
When she little thought of me.

Then all the maids of Islington
Went forth to sport and play,
All but the bailiff's daughter dear;
She secretly stole away.

She pulled off her gown of green
And put on ragged attire,
And to fair London she would go
Her true love to enquire.

And as she went along the high road,
The weather being hot and dry,
She sat her down upon a green bank,
And her true love came riding by.

She started up, with a colour so red,
Catching hold of his bridle-rein;
"One penny, one penny, kind sir," she said,
"Will ease me of much pain."

"Before I give you one penny, sweetheart,
Pray tell me where you were born."
"At Islington, kind sir," said she,
"Where I have had many a scorn."

"I prythee, sweetheart, then tell to me,
O tell me whether you know,
The bailiff's daughter of Islington."
"She is dead, sir, long ago."

"If she be dead, then take my horse,
My saddle and bridle also;
For I will unto some far country,
Where no man shall me know."

"O stay, O stay, thou goodly youth,
She standeth by thy side;
She is here alive, she is not dead,
And ready to be thy bride."

"O farewell grief, and welcome joy,
Ten thousand times therefore;
For now I have found mine own true love,
Whom I thought I should never see more."

TIME

Sir Walter Scott gives a fine sense of mystery and awe to the grim figure of old Father Time in this little poem. Time is always shown to us an old, old man with an hour-glass and a scythe: the one to suggest the passing of the hours, and the other the reaping of Time's harvest, which means the end of life. Carle is an old-fashioned word, still used in Scotland, to denote an elderly and rather rough sort of man. Originally it meant simply man, and the Saxon name Carl, from which we get Charles, came from it.

"WHY sitt'st thou by that ruined hall,
Thou aged carle so stern and gray?
Dost thou its former pride recall,
Or ponder how it passed away?"

"Know'st thou not me?" the Deep Voice
cried;

"So long enjoyed, so oft misused—
Alternate, in thy fickle pride,
Desired, neglected, and accused!

"Before my breath, like blazing flax,
Man and his marvels pass away!
And changing empires wane and wax,
Are founded, flourish, and decay.

"Redeem mine hours—the space is brief—
While in my glass the sand-grains shiver,
And measureless thy joy or grief,
When Time and thou shalt part for ever!"

ENVOY

An "envoy," from a French word, "envoi," means the verses at the end of a poem, in which some general idea of the poem is summed up and emphasized: the "envoy" is thus the "message" which the poem has "carried"—for "envoyer" in French means "to send"—from the poet to the reader. But we often find tiny poems given this title without any preceding verses. In this case it is meant to suggest the last word on a noble life, and it is a poetical way of saying that the life to which this is the "envoy" had been of itself a poem. The writer of the following is Charlotte Becker.

SAY not, because he did no wondrous deed,
Amassed no worldly gain,
Wrote no great book, revealed no hidden truth,
Perchance he lived in vain.

For there was grief within a thousand hearts
The hour he ceased to live;
He held the love of women, and of men—
Life has no more to give!

HOW ANIMALS TALK TO EACH OTHER

rolling over on to his side, he contrived to level his gun, and shot the tigress through the heart. Tame tigers mew to call their keepers to them, and purr with pleasure when they are answered. They have a certain cry when they want water, and another kind of cry for food.

If we notice half a dozen boys put their heads together, then separate, and all set to work, we imagine that they have agreed upon some plan. A similar conclusion is reached, then, when we see animals do the same sort of thing. Two foxes were seen descending a narrow, rocky valley. They stopped at the bottom, put their heads together, and seemed to be coming to some agreement

traordinary evidence of intelligence was given by a cat in a suburb one September night in 1906. Its mistress was aroused from sleep by the cat mewling and scratching her. This behavior was extraordinary in so affectionate a cat, so the mistress sat up in bed and looked about her. She at once discovered the cause of the animal's anxiety. Her husband had been seized with a fit, and was lying desperately ill, and the cat had wanted to call the wife's attention to the matter.

A clergyman not long ago saw a young cat, which had been absent from home for a week, return to the garden by way of the wall. Its mother lay on the lawn, and the kitten, which looked fat and happy after



THREE ORANG-UTANS AT DINNER

The manlike apes are remarkably intelligent and almost human in behavior, and not only do they chatter among themselves, but have a habit of whispering into one another's ears, as if in intelligent conversation.

One of the foxes now lay down in some bushes, while the other returned up the little valley. Presently down came a hare, running as fast as it could, with the fox hard after it. The hare shot past the concealed fox, which darted out a second too late, and so missed the hare. The second fox came up immediately, stopped when it reached the first, made an angry sound, expressing disappointment, and then attacked the bungler which had spoiled the ambush that they had planned together.

There is no doubt that cats try to speak to their masters and mistresses. Many cats have warned human friends of fires which have broken out in the night. Ex-

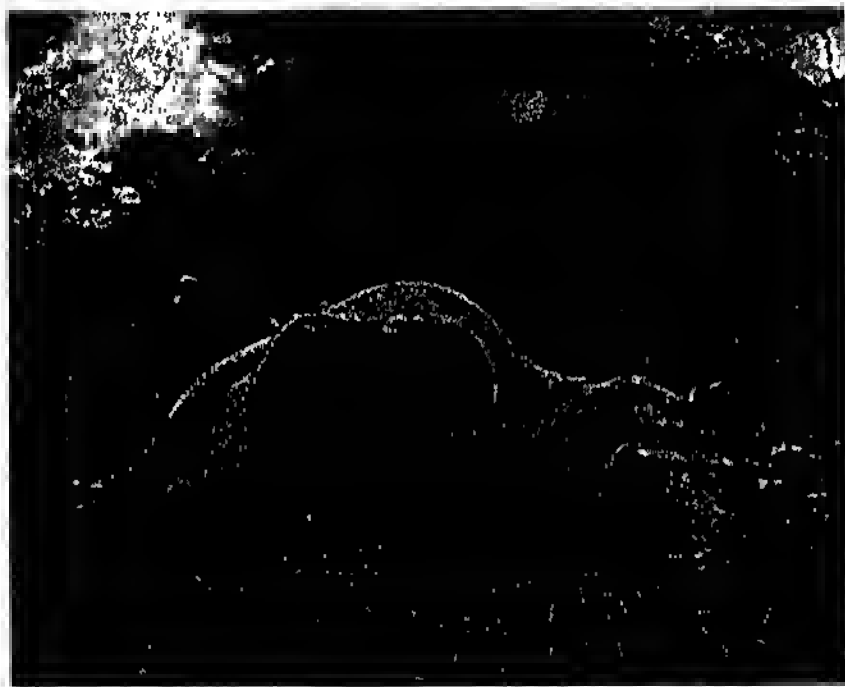
its long absence, went up to her. She got up, and they put their heads together as if talking. After a minute or so, the kitten and its mother bounded on to the wall, and off they went together. They were absent from their homes for more than a week, then returned in the best of condition. Without doubt the younger cat, on first returning to the lawn, had told its mother of some great find, and she had gone away with it to share its good luck.

Wolves make very clever arrangements before setting out to hunt deer. They come up to a place in a body, hold a sort of conference, then divide, and each one takes up a place for itself. One wolf will

then approach the deer, and drive it in a certain direction. The deer is too fleet to be caught like this, but up jumps a second, untired wolf, and drives it a little farther. A third wolf will chase it toward another ambush, and a fourth will continue the chase, always working toward where another wolf is concealed, until finally one of the hidden hunters is able to dash out and make the capture. All the other wolves then come up and share the food thus won.

Naturally we expect more than the average amount of intelligence in the elephant, and we are not disappointed. It has a voice like a clarion for communicating messages to far-off companions. How this acts we know from Mr. W. T. Hornaday, who, a few years

elephants employ. We must remember that in time of drought many pools at which animals drink dry up, so that a great number of wild beasts are driven to the pools which still contain water. Hence enemies are brought together, and experience has taught them all that men are likely to lie in wait at these spots to shoot them. One dark night in summer an English officer climbed a high tree overlooking one of these watering-places to watch for a herd of elephants coming to drink. For two hours he waited without detecting a sign of life; then, very quietly, a huge elephant, such as the herds always follow, stalked out of the wood and walked very cautiously toward the pool, halted near it, and remained motionless, listening intently.



A YOUNG ELEPHANT GRIEVING OVER THE DEATH OF ITS MOTHER

Elephants show many feelings that are quite human. In the first picture we see a young elephant trying to wake up its dead mother by touching her with its foot; in the second it is trumpeting loudly to express grief.

ago, was in India to get elephants for the New York Zoological Park. An attack was made upon a herd of wild elephants, and the herd was divided into two parts. One half went north, while the other half fled south. The hunter's camp lay between the two sections. About bedtime, says Mr. Hornaday, the elephants began signaling to each other by trumpeting. The sounds were just such as a bugler would sound were he calling troops to assemble. One herd called, and the others answered, and it soon became clear to the hunters that the two herds were advancing from different directions to unite. And the two herds did unite, guided, the one to the other, by the signals. The trumpet-call, says the hunter, was "a regular *helloa* signal, and quite different from the *taloo-e* blast which elephants sound when feeding."

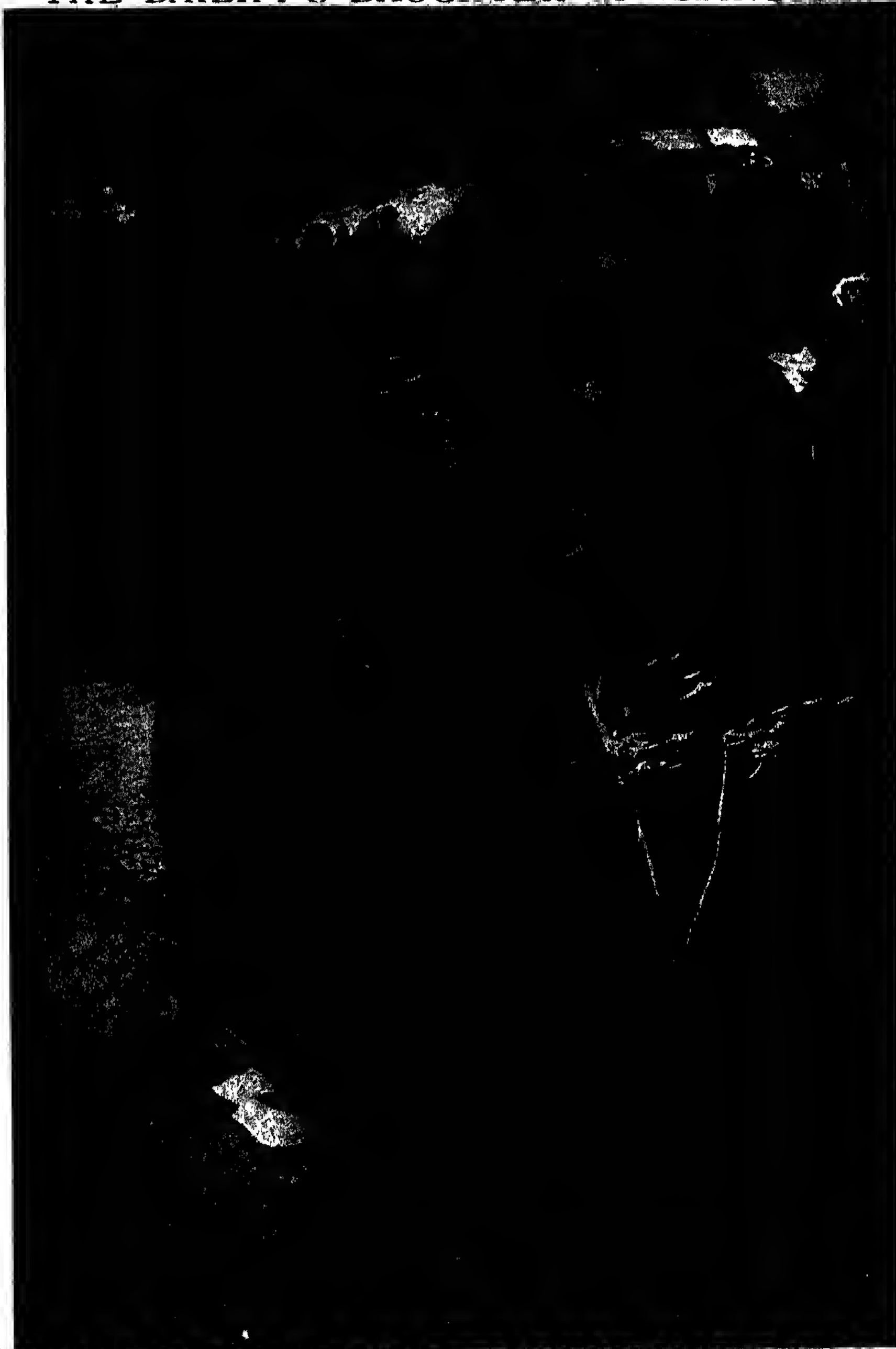
But there is a silent language which

Feeling satisfied at last, he returned to the wood, and came back, accompanied by five other elephants. They all marched slowly to the water, and the leader posted the five as sentinels in five different positions near the pool. Then once more he went back to the wood, and this time brought out the whole herd.

Eighty elephants trooped down to the water to quench their thirst, but not until their leader had come out to see if all were safe. They had waited to receive instructions from him, and now they and he and the five sentinels drank their fill. The officer, who watched with wonder, felt convinced that the whole plan had been carefully arranged in advance, and that the whole herd acted entirely under the control and direction of the splendid beast which led. It was a triumph for silent language.

It is after elephants are tamed, how-

THE BAILIFF'S DAUGHTER OF ISLINGTON.



SHE PULLED OFF HER GOWN OF GREEN
AND PUT ON RAGGED ATTIRE,

AND TO FAIR LONDON SHE WOULD GO
HER TRUE LOVE TO ENQUIRE.

This picture, illustrating the poem on page 5498, is reproduced, by permission, from the painting by Mr. John Hatherall, R.I.

THE CHILD'S WISH IN JUNE

If the author of these verses is not known to fame and if they are not of any real poetical merit, they at least convey a very pleasing sense of that delightfully busy month of June. All work and no play, as we are told, makes Jack a dull boy, and even Nature seems to take a rest in June. Midsummer is a good time for us all to do a little idling, to enjoy the bright sunshine, the sweet bird-song, and the lazy drone of the bees.

MOTHER, mother, the winds are at play;
Prithee, let me be idle to-day!
Look, dear mother, the flowers all lie
Languidly under the bright blue sky.

See how slowly the streamlet glides;
Look how the violet roguishly hides;
Even the butterfly rests on the rose,
And scarcely sips the sweets as he goes.

Poor Tray is asleep in the noonday sun,
And the flies go about him one by one;
And pussy sits near with a sleepy grace,
Without ever thinking of washing her face.

There flies a bird to a neighboring tree,
And very lazily flieth he;
And he sits and twitters a gentle note,
That scarcely ruffles his little throat.

You bid me be busy; but, mother, hear
How the humdrum grasshopper soundeth near;
And the soft west wind is so light in its play,
It scarcely moves a leaf on the spray.

I wish, oh, I wish I were yonder cloud,
That sails about its misty shroud;
Books and work I no more should see,
But I'd come and float, dear mother, o'er thee!

THE DUST

In these verses, written by Gertrude Hall, we have a striking reminder that all earthly things return to dust, for it is indeed true that the dust which Betty has to brush away is but the powdered remains of many things which once were beautiful.

IT settles softly on your things,
Impalpable, fine, light, dull, grey;
Her dingy dust-clout Betty brings,
And, singing, brushes it away.

And it's a queen's robe, once so proud,
And it's the moths fed in its fold;
It's leaves, and roses, and the shroud
Wherein an ancient saint was rolled.

And it is Beauty's golden hair,
And it is Genius's crown of bay,
And it is lips once warm and fair
That kissed in some forgotten May.

A HUNDRED YEARS TO COME

The poet who sings in the following verses strikes a note of sadness and seems oppressed when he contemplates the passing away of everything that is alive and gay at the present time. It is true that in one hundred years few living creatures of to-day will still exist, but the mighty stream of life will still flow on, and we must give place to others, as others have given place to us, so that the prospect is not one of sadness, but rather one to spur us to our best endeavor while our days shall endure. The author of the poem is C. F. Brown.

WHERE, where will be the birds that sing,
A hundred years to come?
The flowers that now in beauty spring,
A hundred years to come?
The rosy lips, the lofty brow,
The heart that beats so gayly now,
Oh, where will be love's beaming eye,
Joy's pleasant smile, and sorrow's sigh,
A hundred years to come?

Who'll press for gold this crowded street,
A hundred years to come?
Who'll tread yon church with willing feet,
A hundred years to come?
Pale, trembling age, and fiery youth,
And childhood with its brow of truth;
The rich and poor, on land and sea,
Where will the mighty millions be,
A hundred years to come?

We all within our graves shall sleep,
A hundred years to come;
No living soul for us will weep,
A hundred years to come;
But other men our lands shall till,
And others, then, these streets will fill,
And other birds will sing as gay,
And bright the sun shine as to-day,
A hundred years to come.

BETTER THINGS

Several of George MacDonald's poems have already appeared in our pages, and we always find him praising the virtue of humility, the delight in simple things. In the following verses he celebrates those "better things" which many of us are apt foolishly to despise in our search after the vanities of life. In every line the choice and the contrast are shown.

BBETTER to smell the violet cool, than sip the
glowing wine:
Better to hark a hidden brook, than watch a
diamond shine.

Better the love of a gentle heart, than beauty's
favour proud;
Better the rose's living seed, than roses in a
crowd.

Better to love in loneliness, than to bask in love
all day;
Better the fountain in the heart, than the
fountain by the way.

Better be fed by a mother's hand, than eat
alone at will;
Better to trust in God, than say: "My goods
my storehouse fill."

Better to be a little wise, than in knowledge
to abound;
Better to teach a child, than toil to fill perfec-
tion's round.

Better to sit at a master's feet, than thrill a
listening State;
Better suspect that thou art proud, than be
sure that thou art great.

Better to walk the real unseen, than watch the
hour's event;
Better the "Well done!" at the last, than
the air with shouting rent.

Better to have a quiet grief, than a hurrying
delight;
Better the twilight of the dawn, than the
noonday burning bright.

Better a death when work is done, than earth's
most favoured birth;
Better a child in God's great house, than the
king of all the earth.

LOVE'S REASONINGS

Charles Mackay, an English poet of some note in the last century, sings here in very simple strains the praise of bird-music, that unfailing source of inspiration to the poets. Every year the birds sing the same song, but it always delights the ear and never grows old, for love lasts always.

WHAT is the meaning of thy song,
That rings so clear and loud,
Thou nightingale, amid the copse—
Thou lark above the cloud?
What says thy song, thou joyous thrush,
Up in the walnut-tree?
"I love my love, because I know
My love loves me."

What is the meaning of thy thought,
O maiden fair and young?
There is such pleasure in thine eyes,
Such music on thy tongue;
There is such glory in thy face,
What can the meaning be?
"I love my love, because I know
My love loves me."

Oh, happy words! at Beauty's feet
We sing them ere our prime,
And when the early summers pass,
And care comes on with time,
Still be it ours, in care's despite,
To join the chorus free:
"I love my love, because I know
My love loves me."

TWO MEN

The point of this little poem is, of course, as old as the oldest of lessons which knowledge teaches man. The first thing any man can have realized was that death leveled all worldly distinctions. The writer of the poem is Charles Noble Gregory.

ONE was a king, and wide domain
He ruled as his sires had done;
A wooden hovel, a bed of pain
Belonged to the other one.

The king was ill and the world was sad—
But the monarch languished, the monarch died;
The beggar was sick unto death, but he had
No one to watch at his low bedside.

Then under the minster the king was laid,
While o'er him the marbles were piled;
But a shallow grave in the fields was made,
By careless hands, for poverty's child.

But now there are those who profoundly declare
If you opened the tomb and the grave,
You could not distinguish, whatever your care,
The dust of the king and the slave.

WHY IT WAS COLD IN MAY

This pleasant little piece of fanciful verse about the days was written by an American lady named Henrietta Robins Eliot.

THE Year had all the Days in charge,
And promised them that they
Should each one see the World in turn,
But ten Days ran away!
Ten Days that should have gone abroad
Some time in early May;
So when May came, and all was fair,
These Days were sent to bed,
And ten good Winter Days were sent
To see the World instead!

THE POET AND THE BIRD

Elizabeth Barrett Browning, who died in the year 1861, one of the greatest of women-poets that the nineteenth century produced, points a moral in this little fable. The natural music of the singing birds is among the rarest delights of our senses, and one of the loveliest things in Nature, but the song of the poet springs from the depths of the heart, and endures for ever, whereas the song of a bird is of the things that perish.

SAID a people to a poet: "Go out from
among us straightway!
While we are thinking earthly things, thou
singingst of divine.
There's a little, fair, brown nightingale who,
sitting in the gateway,
Makes fitter music to our ear than any song
of thine!"

The poet went out weeping—the nightingale
ceased chanting:
"Now, wherefore, oh, thou nightingale, is
all thy sweetness done?"
"I cannot sing my earthly things, the heavenly
poet wanting,
Whose highest harmony includes the lowest
under sun."

The poet went out weeping, and died abroad,
bereft there;
The bird flew to his grove, and died amid
a thousand wails!
Yet when I last came by the place, I swear
the music left there
Was only of the poet's song, and not the
nightingale's!

WHAT DOES IT MATTER?

The writer of the following lines voices an eloquent plea for good conduct, and reminds us that it is not by the amount of this world's wealth in money or possessions that we may inherit from others or acquire by our own efforts, not by our seeming success or failure, that we are to be judged, but by what we think and do and our efforts to lead an upright and useful life. These are among the things that matter much.

IT matters little where I was born,
Or if my parents were rich or poor,
Whether they shrank from the cold world's
scorn
Or walked in the pride of wealth secure;
But whether I live an honest man,
And hold my integrity firm in my clutch,
I tell you, my brother, as plain as I can,
It matters much!

It matters little how long I stay
In a world of sorrow, sin, and care;
Whether in youth I am called away,
Or live till my bones of flesh are bare;
But whether I do the best I can
To soften the weight of adversity's touch
On the faded cheek of my fellow-man,
It matters much!

It matters little where be my grave,
If on the land, or in the sea;
By purling brook, 'neath stormy wave.
It matters little or nought to me;
But whether the angel of death comes down
And marks my brow with a loving touch,
As one that shall wear the victor's crown,
It matters much!

TO A SKYLARK

We have already read, in our book, Wordsworth's poem, "To the Skylark," and here is another poem by the same writer, in which he expresses not the general feelings of a poet awakened by the skylark's song, but recalls the emotion of some particular occasion when he had listened to a skylark. It is interesting and instructive to notice this difference between the poet's addressing "The Skylark" and "A Skylark," for a very important distinction is here observed.

UP with me! up with me into the clouds!
For thy song, Lark, is strong;
Up with me! up with me into the clouds!
Singing, singing.
With clouds and sky about thee ringing,
Lift me, guide me, till I find
That spot which seems so to thy mind!
I have walked through wildernesses dreary,
And to-day my heart is weary;
Had I now the wings of a faery,
Up to thee would I fly.
There's madness about thee, and joy divine
In that song of thine;
Lift me, guide me high, and high,
To thy banqueting-place in the sky.

Joyous as morning,
Thou art laughing and scorning;
Thou hast a nest for thy love and thy rest,
And, though little troubled with sloth,
Drunken Lark! thou wouldst be loth
To be such a traveller as I.
Happy, happy liver,
With a soul as strong as a mountain river,
Pouring out praise to the Almighty Giver!
Joy and jollity be with us both!
Alas! My journey, rugged and uneven,
Through prickly moors or dusty ways must wind;
But, hearing thee, or others of thy kind,
As full of gladness and as free of heaven,
I, with my fate contented, will plod on,
And hope for higher raptures, when life's day
is done.

RAIN ON THE ROOF

The author of this familiar poem was Coates Kinney, an American writer, well known in his day, who was born in 1826. He was a newspaper editor, and he wrote many poems but he is best known by this very charming lyric. It cannot be said that he has chosen the best metre, though it does in a way suggest the gentle patter of the rain. The matter of the poem, however, is admirable, as he has seized upon a very familiar experience of Nature and conveyed it truthfully. The falling of rain while we lie abed in a little country cottage has a soothing effect on the mind, and awakens, in some strange way, the tenderest emotions of the heart.

WHEN the humid shadows hover
Over all the starry spheres,
And the melancholy darkness
Gently weeps in rainy tears:
What a joy to press the pillow
Of a cottage-chamber bed,
And to listen to the patter
Of the soft rain overhead!
Every tinkle on the shingles
Has an echo in the heart,
And a thousand dreamy fancies
Into busy being start;
And a thousand recollections
Weave their air-threads into wool,
As I listen to the patter
Of the rain upon the roof.

Now in memory comes my mother,
As she used in years ago,
To survey her darling dreamers
Ere she left them till the dawn;

Oh, I see her leaning o'er me,
As I list to this refrain
Which is played upon the shingles
By the patter of the rain.

Then my little seraph sister,
With her wings and waving hair,
And her bright-eyed cherub brother—
A serene, angelic pair—
Glide around my wakeful pillow,
With their praise or mild reproof,
As I listen to the murmur
Of the soft rain on the roof.

And another comes to thrill me
With her eyes delicious blue;
And forget I, gazing on her,
That her heart was all untrue.
I remember that I loved her,
As I ne'er may love again,
And my heart's quick pulses vibrate
To the patter of the rain.

Art hath nought of tone or cadence
That can work with such a spell
In the soul's mysterious fountains,
Whence the tears of rapture well,
As that melody of Nature,
That subdued, subduing strain,
Which is played upon the shingles
By the patter of the rain.

NOW THE DAY IS OVER

The Rev. S. Baring-Gould, who is a famous novelist and writer of books of travel, has also given us several hymns which have long been favorites in all the churches. Who has not sung his inspiring "Onward, Christian Soldiers"? As an evening hymn, giving voice to the simple faith of little children, that which we print below is sung in churches every Sunday wherever our language is spoken. Mr. Baring-Gould, who was born on January 28, 1834, has written some fine stories, such as "Mehalah" and "John Herring," but his beautiful hymns may outlast even his fine stories.

NOW the day is over,
Night is drawing nigh;
Shadows of the evening
Fall across the sky.

Now the darkness gathers,
Stars begin to peep;
Birds, and beasts, and flowers,
Soon will be asleep.

Jesu, give the weary
Calm and sweet repose;
With Thy tenderest blessing
May mine eyelids close.

Grant to little children
Visions bright of Thee;
Guard the sailors tossing
On the deep blue sea.

Comfort every sufferer
Watching late in pain;
Those who plan some evil
From their sin restrain.

Through the long night watches,
May Thine angels spread
Their white wings above me,
Watching round my head.

When the morning wakens,
Then may I arise,
Pure and fresh and sinless,
In Thy holy eyes.

Glory to the Father,
Glory to the Son,
And to Thee, Blest Spirit,
While all ages run.

LITTLE VERSES FOR VERY LITTLE PEOPLE

MY LADY WIND

My Lady Wind, my Lady Wind,
Went round about the house to find
A chink to get her foot in;
She tried the keyhole in the door,
She tried the crevice in the floor,
And drove the chimney soot in.

And then, one night when it was dark,
She blew up such a tiny spark,
That all the house was pothered;
From it she raised up such a flame,
As flamed away to Belting Lane,
And White Cross folks were smothered.

And thus when once, my little dears,
A whisper reaches itching ears,
The same will come, you'll find;
Take my advice, restrain the tongue,
Remember what old nurse has sung
Of busy Lady Wind.

TEENY-WEENY

BY THE AUTHOR OF
"WYNKEN, BLYNKEN, AND NOD."

Eugene Field, who wrote this poem and that on the previous page, was an American author, and one of the kindest-hearted men who ever lived. All the children loved him, and many thousands who only know his poems love him too. He was born in 1850 and died at the end of 1895. His life, which was all too short, was chiefly spent as a busy writer in the Chicago news papers, but he made his name immortal by his many poems for and about children. No one has excelled him in his work.

EVERY evening, after tea,
Teeny-Weeny comes to me,
And, astride my willing knee,
Plies his lash and rides away ;
Though that palfrey, all too spare,
Finds his burden hard to bear,
Teeny-Weeny doesn't care ;
He commands, and I obey.

First it's trot, and gallop then ;
Now it's back to trot again ;
Teeny-Weeny likes it when
He is riding fierce and fast.
Then his dark eyes brighter grow
And his cheeks are all aglow :
" More ! " he cries, and never " Whoa ! "
Till the horse breaks down at last.

Oh, the strange and lovely sights
Teeny-Weeny sees of nights,
As he makes those famous flights
On that wondrous horse of his !
Oftentimes, before he knows,
Wearylike his eyelids close,
And, still smiling, off he goes
Where the land of By-low is.

There he sees the folk of fay
Hard at ring-a-rosie play,
And he hears those fairies say :
" Come, let's chase him to and fro ! "
But, with a defiant shout,
Teeny puts that host to rout ;
Of this tale I make no doubt,
Every night he tells it so.

So I feel a tender pride
In my boy who dares to ride
That fierce horse of his astride,
Off into those misty lands ;
And, as on my breast he lies,
Dreaming in that wondrous wise,
I caress his folded eyes,
Pat his little dimpled hands.

On a time he went away,
Just a little while to stay,
And I'm not ashamed to say
I was very lonely then ;
Life without him was so sad,
You can fancy I was glad
And made merry when I had
Teeny-Weeny back again.

So of evenings, after tea,
When he toddles up to me
And goes tugging at my knee,
You should hear his palfrey neigh !
You should see him prance and shy
When, with an exulting cry,
Teeny-Weeny, vaulting high,
Plies his lash and rides away !



From "With Trumpet and Drum." Copyright 1892, by Mary French Field. Published by Charles Scribner's Sons.

Tweedledum and Tweedledee
 Agreed to have a battle;
 For Tweedledum said Tweedledee
 Had spoiled his nice new rattle.



Just then flew down a monstrous
 crow,
 As black as a tar-barrel;
 Which frightened both the heroes so,
 They quite forgot their quarrel.



TWEEDLEDUM AND TWEEDLEDEE



THE FAMOUS DOGS OF ST. BERNARD, THAT SHOW ALMOST HUMAN INTELLIGENCE

HOW ANIMALS TALK TO EACH OTHER

WHEN we think of animals talking to one another, none of us expects them to have a set language such as our own. We know that they do communicate with one another, but it is not by means of words such as we use.

How do we know, then, that they talk? We judge by results. Horse talks to horse, and does his best to make himself understood by man. Dog talks to dog, and, in a hundred different ways, seeks to speak to us. Cats have their own language; the wild beasts of the forest, of the plain, and of the mountain, have their speech; the birds are gifted with a considerable language; and the insects have, perhaps, the most varied language of all. Few of us know even the A B C of the animal language; and this story will not pretend to teach it. We shall, instead, think over things which show that animals do communicate one with another, and we shall try to understand how some of them do so.

With few exceptions, all the higher animals make use of their voices. But we are not to suppose that the speech of animals is confined to the sounds which we ourselves are able to interpret. There are other ways of communicating than by the voice.

Let us suppose that some person from a far land, say, an Eskimo, were

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to discover two deaf-and-dumb boys "talking" upon their fingers, would that Eskimo imagine that a conversation was in progress between the two? The method would be strange, and not to be understood by this Eskimo, who could never have heard of such a thing as the deaf-and-dumb alphabet. There are open to the animals ways of speech quite as wonderful as that employed by our skilful deaf-and-dumb boys and girls.

Let us start at the top of the animal tree, and think of the monkeys. We know that they have means of communicating one with another.

Men who have charge of monkeys tell many stories about their cleverness. One day, Jenny, an orang-utan at the London Zoo, went farther from her cage than her trainer wished, and he pretended to be cross with her. She instantly ran up to him to make friends, put her arms round his neck, kissed him, and whispered to him till she believed herself forgiven. He did not understand what she was whispering, as, doubtless, one of her own species would.

A very different experience of ape language befell Brehm, the great German traveler and naturalist. He came upon a troop of baboons, and two bold dogs which he had with him went in pursuit. The baboons

ran away, leaving behind, however, a baby baboon, which Brehm hoped the dogs would catch for him. But, as the dogs drew near, there was a loud outcry among the baboons; and, while the rest yelled their battle-cry to frighten the dogs, a large old baboon came quietly but quickly down the rocks, snatched the little one away almost from the jaws of the dogs, put it in a place of safety, and kept guard until it had caught up to the rest. Two days afterwards, Brehm met the same troop. Again the apes raised their battle-cry. Brehm discharged his gun at them. The females fled in haste behind rocks with the young ones, while the big males, roaring and barking, sprang upon the edges of rock, and then deliberately rolled big stones down upon Brehm and his companions. The baboons all acted under the command of their leader, and one actually climbed a tree, with a stone in his arms, that he might have a better and higher position from which to throw his missile.

Many such cases have been recorded, so that there is no chance of a mistake. Take an even more notable example. Here the animals were a party of baboons at the Cape of Good Hope. They had stolen some clothes from barracks, so Lieutenant Shipp sent a squad of soldiers to recover the articles. The baboons made for some caverns, which the soldiers tried to prevent them from reaching. But the baboons were too quick; they posted fifty of their number to guard the way to the caverns, and the others distributed themselves like soldiers at various posts, and hurled down great stones on the soldiers. The leader was an old, grey-headed baboon which the soldiers knew quite well, for it had often paid friendly visits to the barracks. He

was the general, and the soldiers could hear him issuing his orders to the rest, while the others obeyed him as soldiers obey their officers. Here the English soldiers had to retreat before the apes, as Brehm and his friends had had to do—to retreat from ape-soldiers who acted like human beings, upon the spoken instructions of their skilled commander.

It is not easy to study the language of such terrible animals as lions and tigers. We know that the lion roars like thunder to terrify his prey, or to challenge other lions to battle. But when the male lion talks to the lioness he uses gentle language, and will purr to the lady of his love like the great cat that he is. The speech of the tiger is not more easy to describe, but we may see by a story

what happens when the tiger does speak. A few years ago a man who was resting after a day's hunting in India suddenly felt himself crushed to the ground, and, on coming to his senses, found that a great tiger was carrying him away in her mouth. She carried him about a mile and a half, then put him down. His left

shoulder was broken, and he dared not move, though he still managed to clutch his gun in his right hand. The tigress now raised her head and gave a long, soft cry. The answer came from the jungle close by, and two tiger cubs, her babies, came running up. They were terribly frightened when they saw a man lying at their mother's feet. But she cried softly and purred to them, and taking him up in her mouth, gently shook him,

and tossed him about from paw to paw as a cat tosses a mouse. She was telling them by speech and by action to come and eat him. After much persuasion of this sort they approached, and began with their baby teeth to tear at his legs, until,



AN INTELLIGENT MONKEY



OUT FOR A WALK



YOUNG LION CUBS INTERESTED IN THE CAMERA THAT TOOK THIS PHOTOGRAPH

ever, that we are able to see some of the most wonderful things that they do. Two tame elephants had to climb with their loads up so steep a place in the mountains that their drivers placed tree-trunks as steps for them. The first elephant to go did not like the way at all, and complained with loud cries to the one waiting below. The latter watched with the greatest interest and could not keep still, but was moving about all the time, as if trying to help its comrade, just as we see men moving their hands and feet when watching a gymnastic display.

At last the first one reached the top and the turn of the second came. He was just as nervous as the other. The one at the top waited anxiously, and as soon as he could, he put out his trunk, curled it round that of the other elephant, and pulled the latter safely up.

And then what a scene of joy there was between the two! They "embraced" each other with their long trunks, and stood face to face for a long time, as if whispering congratulations.

A word now for the conversation of the pigsty. Let us remember that by nature the pig is one of the cleanest and most intelligent of animals; it is only the cruel manner in which men neglect the pig which makes this animal's habits so unpleasant. There was a famous pig in the New Forest in England which was taught to find and bring back game which its master shot.

This pig had a numerous family of little ones, and she noticed that, one by one, these were disappearing while she was out hunting with her master. The little ones were being taken and eaten by their owners. One night, the big old



AN INTERESTED CONVERSATION BETWEEN TWO LIONS

mother-pig was missed from her home, and men set out in search of her. They found her and the remainder of her family on the verge of the forest. She was talking busily away to them in the best of pig language, and driving them to a place of safety in the woods, away from the sty from which so many of their brothers and sisters had gone to be roasted, in their mother's absence.

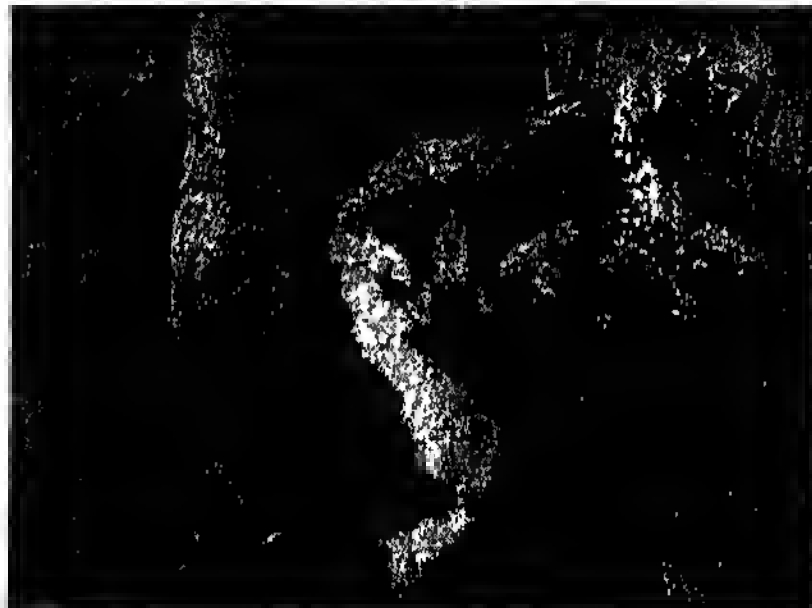
How whales talk we do not know, but we do know that the mother whale is a devoted parent who will fight to the death for her little ones. Brave, too, are the seals. The male seal will defend his family until he is struck dead. The mother does not wait; she calls her children with a voice like that of a bleating sheep, and away they shuffle to the sea. She talks to them in this way when danger does not threaten, and it is at the call of her voice that they go to the sea to learn to swim when they are babies.

We must all have noticed that rats and mice have some way of talking. If a rat should discover a new source of food supply to-night, by to-morrow night he will have brought a dozen friends with him to share, and these in turn will bring dozens more. But do we ever think of the frog as a talker? He must talk pretty well. If we walk quietly up to a frog's pond on a warm night in spring, or early summer, we hear the frogs talking. Make a sound, and there will be heard one loud, commanding croak, then a series of flogs, and after that perfect silence. The leader of the frogs has sounded the danger-signal, and all the rest have popped down under water.

Here is an instance of communication of a different kind. A gentleman who lives in a country house was alone in his house for some time some years ago. At the bottom of his garden runs a meadow in which frogs live. One of these frogs made its way into his garden and lived in his rhubarb-bed. He did not like frogs, but some of his visitors did, so he let this frog remain where it was, free to come and go in the meadow or in his garden. One evening, as the lamps were lighted in his

house, what should he see on the doorstep but the frog from the meadow and the rhubarb-bed! The weather was very chilly, although the time was summer, so there was a fire in the sitting-room. Master Frog, hopping through the doorway, entered the sitting-room, looked about, then hopped toward the fire, and squatted down, blinking comfortably at the cheery blaze. The gentleman was amazed at its impudence, but let it remain for an hour or so, then he gently put it out of doors and went to bed.

Next night the frog was there again, so he felt bound to feed it, for mere hospitality's sake. He knew nothing about the diet of frogs, so after puzzling his brains he put down some powdered sugar. And, astounding to relate, the frog ate it—every speck of it. After staying its hour, it was put outside. There had never, up to this time, been



A CAUTIOUS FOX

more than one frog at a time in that garden, so far as was known, but the very next night after the supper of sugar, the frog came back, accompanied by its mate. Both creatures received sugar that night, and they enjoyed it. Every night for the next three weeks the two frogs appeared

at the same time at the house, were admitted, and were given their supper of sugar. And then, at the end of the third week, the kind-hearted gentleman had the misfortune to tread on one of the frogs and kill it. The other one went out as usual, but was never seen again after that day. It could not understand that its mate had been killed by accident, and it could not go again to the place where its mate had come by its death.

From wild animals we come back to tame creatures. Anyone who has had donkeys in his neighborhood need not be told that these animals talk to each other. There is a little Shetland pony, of which you can see a picture in the BOOK OF KNOWLEDGE, who knows how to talk to a donkey. The pony spends an hour or two every day in a meadow adjoining his stable, and sometimes a donkey is to

HOW ANIMALS TALK TO EACH OTHER

be seen in the field next to it. The pony, on being turned into the field, first takes a gallop all round, then canters up to the iron fence, and neighs. This call brings up the donkey to the other side of the fence, and the pony waits for the donkey to put his head between the railings and gently nibble his neck. Then he returns the compliment by nibbling the neck

when he hears a familiar footfall approaching his stable. If he wants to come out, he knocks at the door with his front feet. Should he by any means be short of water, he will tap at his bucket with one of his hoofs until somebody supplies him with some.

But what of the dog and his speech? That he understands much that we



TWO TERRIERS TAKING A WOUNDED COLLIE DOG TO A LONDON HOSPITAL

This picture is reproduced from the painting by Yates Carrington at King's College Hospital, by permission of Messrs. A. and F. Pears.

of the donkey. That is an exchange of service which horses and donkeys love.

This pony has his set speeches with which he summons people to his stable. He has a shrill neigh which announces that, according to his appetite, it is time the groom went to feed him; he has a low whinny which expresses his pleasure

say, all of us who have kept dogs know. A fine example is furnished by a gentleman who was talking to a Scots shepherd of the latter's dog. The shepherd, to show the intelligence of the animal, said in the middle of a sentence about something else—and said it in a low voice without looking at the dog—

"I'm thinking, sir, the cow's in the potatoes." The dog instantly leaped up, sprang through the window, and clambered up on the turf roof of the cabin to get a good view. Not finding the cow in the potato garden, it went to the cowshed, saw the cow there, then returned. The trick was repeated, and again the dog darted off, with similar results. Presently the shepherd said, for the third time: "The cow's in the potatoes, sir." But this time the dog merely got up, showed his teeth as if in a smile, growled at his master, then curled himself up

one another is the action of a spaniel which was found lame by a kind doctor. He took it home and cured it, and let it go. A few months later the spaniel returned to him again quite well, but bringing with it another dog which was lame. With pitiful looks and whines it seemed to beg the good doctor to give its friend as kind treatment as it had received itself.

Lest we should think this is too wonderful for belief, let us recall an incident which happened at a London hospital. Three dogs marched in there



HOW MULES PASS ONE ANOTHER ALONG THE EDGE OF A PRECIPICE IN THE PYRENEES

These animals show remarkable intelligence. When they meet on a narrow ledge, the mules going one way lie down and keep quite still while the animals going the other way step over them, as seen here.

comfortably before the fire, and refused to go out.

There is a good deal of language in the bark and in the whine of a dog; the dog can almost speak to us with his eyes, with the twists and jerks and shrugs of his body. But how do dogs talk to one another? Perhaps at times their thoughts are transferred, without sounded words, from dog's brain to dog's brain, as we transmit telegrams without telegraph wires.

A wonderful example which shows that dogs do convey their thoughts to

one day. Two of them were terriers belonging to a well-known bookseller.

These two were all right, but between them they helped into the hospital a big collie dog which had been injured. The terriers lived near the hospital, and their master's explanation is that, frequently seeing injured people taken there, they had come to the conclusion that a place which was good for suffering men, and women, and children, must be good for suffering dogs. But how eloquently they must have talked to persuade the injured collie to let them take him to the hospital!

THE NEXT STORY OF NATURE IS ON PAGE 557E.

The Book of WONDER

THE questions on these pages are of great interest to us all, whether we are little children, looking up at the starry skies and wondering where space ends, or whether we are wise old men and women still studying the same great subject. Why should an egg grow hard when cooked, while other objects become soft is not so difficult to answer; but can we know the future, and how can we govern the future in our own lives are among the things that are most important to us. Really the answer to this last question partly gives the answer to the question, Why is it bad to believe in fatalism? For if we govern our lives so that we shall be strong in the future, the doctrine of fatalism must be overthrown. As a rule we do not think that metals can grow tired or that they may become poisoned; and it is interesting to read the answers to these questions and find out if such things are possible. These answers tell us how it is that we can see people in our minds when they are absent, and how it is that the blind can make the sense of touch do much more than we who have full use of all the senses.

DO THE STARS REALLY TWINKLE?

THE answer to this question is:

No. A source of light may really twinkle; the light may grow less and more intense alternately because less and more light is really being produced. But the stars are suns, and they do not really twinkle. Something must happen to the light from the star before it reaches our eyes which makes the star appear as if it twinkled. The star itself sends steady, equal rays of light in all directions, and there is no reason to believe that anything happens to these rays until they reach our air.

But when they encounter the air, various things may happen; and one is that some of the rays may be slightly delayed as compared with others, and thus there is made possible the remarkable thing called interference, which we notice in the case of sound-waves and water-waves. It is possible, as we see when we throw two stones, one after the other, into a pond, to have two sets of waves going in such a way that they will either cancel each other or double each other. This interference in the case of light-waves causes what corresponds to a beat in sound-waves. It is probable that the twinkling of stars is due to this fact of interference.

WHY DOES BOILING MAKE POTATOES SOFT AND EGGS HARD?

It seems curious at first sight that the same process should have such different results in these two cases;

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but the key to the puzzle lies in the very different natures of an egg and a potato. A potato is mainly a store of starch for the future needs of the plant, and the bulk of it consists of grains of starch covered with a hard coat of almost woody substance. It is these that give the potato its firmness. When the potato is boiled, water is drawn into the starch-grains through the hard, stiff coat, which is not elastic, and cannot expand when its contents are increased.

Water cannot be compressed, and therefore the grain is bound to burst. The bursting of all the hard envelopes of the starch-grains, and the increase of water in the potato as a whole, are the causes of the potato's softness when it has been boiled.

Though there is much more water in an egg than most people think, a large part of it consists of a peculiar chemical substance, meant to be a supply of food material to the growing chick, and called egg-albumen. It belongs to the great class of the proteins. This word means the same as proteids, which is better known, but is now no longer used by chemists. Proteids, or proteins, are the most important of all animal and vegetable compounds.

• Perhaps the most especial fact about the proteins is that they are made up of molecules which are enormous, for molecules, and prob-

ably this accounts for the fact that they are very easily turned solid by various means. This is called coagulation; and every protein has its coagulation-point of temperature. The albumen, or white, of an egg is an example of this, and the egg turns hard because this protein clots, or coagulates.

We must not suppose that, like the turning solid of water when it is cooled, this is merely a question of temperature, for a clotted protein does not turn liquid again when it cools, and it is quite easy to clot a protein in many ways without heating it at all. Clotted protein is naturally very much less easy to digest than liquid protein.

HOW FAR DOES SPACE EXTEND?

We know that though the earth never ceases to fly in space, yet its path is a closed one, since it moves in what is very nearly a circle, and not in a straight and endless line. As far as that movement is concerned, the earth does not need so much space, after all, for its flight. But we find, when we study the sun, that he also is moving, and moving onward; not, so far as we can tell, in a closed path, or orbit, at all. And so we are bound to ask how far does space reach, for we ourselves must be traveling with the sun wherever he goes.

The only possible answer, fearful though it may sound, is that space goes on for ever and ever in all directions. The Latin word for infinite simply means not ended, or unbounded, and what we mean when we speak of the infinite universe is that space is without end in all directions. Yet we are not to allow this tremendous idea to make us shake, which is what the word tremendous means. For greater—far greater—than infinite space is the wonderful mind of man, which is able to survey and think of such a thing.

WHAT IS SPACE MADE OF?

There is no other possible answer to this question than that space is made of—space! The stuff that makes things does not make space, but it exists in space. Space is no kind of matter, however transparent and fine, but all matter and the things that matter makes exist in space. We might as well ask the question, What is time made of? as, What is space made of? And there is nothing but the

corresponding answer to 'return to both.

We know that all sorts of wonderful things happen through space. Light flies through it for immense distances, and the power of gravitation acts through it. At first we can find nothing at all to carry these powers, and yet our minds assure us that there must be something there, or gravitation could not act and light could not travel. Thus we come to another interesting question—a question which really can be asked and must certainly be answered, What fills space?

Certainly something fills space, and we may call it the ether. We say that gravitation acts through this ether, that the ether conveys light, radiant heat, and electricity, and that it exists absolutely everywhere. We believe that infinite space is filled with this ether—which, indeed, it is now the fashion to call the "ether of space." But at present we can scarcely return any more definite answers as to what this ether is, though we know so much of what it does.

IS IT POSSIBLE TO KNOW THE FUTURE?

In many ways we *do* know the future, and are always learning to foretell more and more of it. There was seen in the sky not very many years ago a great comet which had not been beheld by the eye of man for three-quarters of a century, but the return of which was predicted correctly to within a few weeks or days. Again, we know that, on the average, men who eat and drink too much will die sooner than those who do not. We know that if we buy something at a shop without paying for it, a bill will be sent in. We know a great deal of the future, therefore, because the future, like everything else, has causes, and where we know the causes we can foretell what the effects will be. Science, it has been said, is foreseeing, and that assertion is yearly coming to be more justified.

Though we do not know that we shall die during the following year, we know pretty closely how many persons will die, how many babies will be born, how many men will go bankrupt, and so on, in the following year. We can apply the law of averages, and that helps us to foretell the future with fair accuracy.

There is much we cannot know, much of detail about our own lives which no

one can predict, and it is indeed well to know that our own wills and courage and faith can *make* the future, and that it is not *fatally* decided for us in every particular by some power against which we are helpless. Too many people have believed this lie, and have failed in consequence to live the highest kind of lives.

WHAT IS FATALISM?

In many times and in many parts of the world men have preached that everything which will happen will do so whatever we try to do, or try not to do. Men have rightly seen that great facts in the world go on whether we will or not, that autumn follows summer, that we all must die, and so on. And so they speak of something which they call Fate. But too often they have gone on to say that our feeling of power and of will is a mistake and unreal, and that, though we think we decide things, everything we do is really done to us, and we are in the grip of Fate just as much as lifeless things and animals and plants are. This heart-breaking doctrine is called Fatalism.

WHY IS IT A BAD THING TO BELIEVE IN FATALISM?

Anyone can readily guess what are the consequences of fatalism. Of course, it means that, in places where it is believed, men fold their hands and accept whatever comes without a protest. If there is drought, they sit still and suffer instead of going in search of water. If there is a pestilence, or a wicked king on the throne, or if the crops do not ripen, they just accept these things and say: "This is Fate, and what is the good of striving against it?"

But the truth is that, though everything is due to causes and must follow those causes, the will of man is one of the causes in the world; it is, indeed, the greatest of them all in the effects it can produce. And so fatalism is false, and the true doctrine to believe is that God helps those who help themselves.

ARE WARS NECESSARY?

No real thinker believes that war, as we now understand it, is necessary. But the question is much more difficult if we ask it regarding the past. Everyone will now agree that certain kinds of wars were never necessary and need not have happened. Among them would be all wars undertaken merely for the sake of a single person, whether for the sake of

a king and his royal line, or for the sake of a great conqueror like Napoleon.

We shall all agree, also, that the wars of religion were not necessary. It could not be to the real service of religion that men should kill each other, and, of course, in all such cases the real cause was the ambition and lust of power of individual persons, kings and others, with whose "immeasurable, unimaginable guilt, heaped up from hell to heaven," as John Ruskin says, history is full.

But there were also wars made by more civilized peoples, whose numbers were rapidly increasing, upon barbarians. All civilization has spread in this way, and those among whom it spread have always fought against the invaders, as the Gauls and the Britons did against Julius Cæsar. It seems that, as the world is made, such wars were necessary in the past, just as death is necessary.

The case is quite different now, when the whole of the habitable world, and practically all the uninhabitable world too, have already been brought under the control of the so-called civilized nations; and so, in the future, these wars of aggression also will no longer be necessary.

IS THERE ANY GOOD IN WAR?

War in itself is bad. When a nation goes to war, it suffers horribly, even if the enemy never sets its foot within its borders. Nowadays when the whole manhood of a nation is engaged in battle, no one escapes. The whole life of the people is upset. Trade and commerce are interfered with, and the energy of the manufacturer is chiefly turned to the making of material for death and destruction. Scarcely anyone escapes the sorrow that comes from the death of loved ones, who are stricken down in the prime of their youth and usefulness, or the knowledge that they are suffering far from home or languishing in a foreign prison.

All this is bad, but it is nothing to the suffering of the people in whose country the war is fought; where homes are ruined, the land is laid desolate, and the women and children are often dreadfully done to death. In times of peace, we are horrified and saddened when we hear of shipwrecks and disasters at sea. In times of war, men who in times of peace would risk their own lives to save the lives of others have caused these ship-

wrecks and disasters, and thought that they were justified.

But, in spite of the horrors that it brings, war is sometimes right. If one nation is attacked by another, which seeks to overthrow its liberties, to oppress its people, to take away its lands and goods, then the only thing that the nation which is attacked can do is fight. A war to uphold freedom and justice, to save the weak from oppression, to save our country from an attempt by an enemy to destroy it is right. If the youth of a country are unwilling to stand "between their loved homes and the war's desolation," that country cannot stand.

CAN A PIECE OF IRON GET TIRED?

Certainly it can, and so can a piece of steel, and, indeed, metals in general, as well as many other things that are not really alive. When the iron is "tired" it will not behave in the same way as when it is in its usual state. After a "rest" it will come right again.

People who use razors often notice that if a razor is used every day it will not shave so well. It gets tired, but after a rest it will take as keen an edge as ever. This is a very interesting question which has lately been studied very carefully, and the special interest of it is more even than we can see for ourselves at first; for if ordinary matter, not alive, can get "tired," perhaps part of *our* tiredness may be due to the same thing happening in the matter of which our bodies are made. Not much is known about fatigue, and it is very important to discover that there is a change produced in all matter by strain.

CAN WE THINK ABOUT PEOPLE WITHOUT SEEING THEM IN OUR MIND?

Certainly we can, for we remember our friends by many senses, and not by our eyes only. In most people the mind's eye, as we call it, is very powerful, and they remember faces clearly, and think of their friends as something *seen*. Then again, in other cases people have their mind's ear, as we might equally well call it, very well developed, and they remember voices clearly, and will often think of their friends or their enemies as something *heard*.

Exactly the same is true of other senses, such as the sense of touch. When we are

very fond of a person, our thought of him or her may mean recalling the face and the voice and the touch of the hand all together. The artist will have the one tendency strongest, whilst the musician will have another. Some people think of their friends under their names; but in our minds we may see their eyes, or mouth, or clothes.

CAN METALS BE POISONED?

The answer to this question is yes. That is to say, we find that metals which do certain things when an electric current is passed through them, or when they are heated, or when a beam of light plays upon them, and in other such cases, can no longer do what we expect if they have first been treated with some of those very chemical compounds, such as prussic acid, which poison living creatures.

When a person is under the influence of chloroform, certain of his nerve-cells are poisoned, and do not work, and then the person will not react, as we say, to pain or to light and other stimulants. In the same way, not only a strip of turnip or carrot, but a strip of metal may be poisoned and fail to react. The rule seems to be that anything which acts in a particular way on a strip of muscle will act in a very similar way on a strip of vegetable tissue or also on a strip of metal.

CAN A BLIND MAN'S TOUCH TAKE THE PLACE OF HIS SIGHT?

The answer to this is partly yes and partly no. Certainly the sense of touch can never develop in any blind man so as really to make up for his loss of sight, and no one supposes that it can. But it is true that a blind man, because he must make the most of the senses he has, educates his sense of touch to a high degree, and makes the most of it. People who can see do not do so, any more than they develop the sense of smell to the utmost. When we can judge of a thing positively by looking at it, we do not trouble to try our fingers on it.

But it is quite untrue that the sense of touch itself is more delicate and acute in blind people. The point has lately been studied, and it is found that touch is less acute in blind people, though it may be better educated for special purposes. The brain being a whole, the whole of it must suffer when part is defective.

THINGS TO MAKE AND THINGS TO DO



NESTING-BOXES CONTAINING EGGS AND YOUNG BIRDS

A HOME FOR THE BIRDS

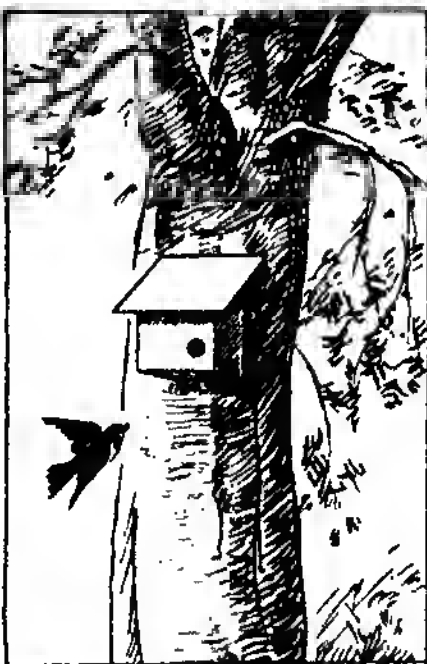
TO the boy or girl who is a lover of Nature there are few more enjoyable hobbies than that of putting up nesting-boxes for the birds, and then, when the birds have made their nests in the boxes, paying a daily visit to see how they are getting on hatching and bringing up their little family. There are few gardens where we cannot entice the birds to nest in a little box placed on a tree or a wall for their convenience, and the cost of erecting nesting-boxes is practically nothing.

First of all as to the boxes. These may be of the simplest and roughest kind, provided they are weather-proof. A small box from the grocer's may be cut down, but if we wish to make a nesting-box the best form is as follows: Take a piece of wood 8 inches by 9 inches, as shown in the lower picture. This is for the back of the box. Then cut two

pieces for the sides, 9 inches high on one side and 6 inches on the other, by 8 inches wide; a piece 8 inches by 6 inches for the front, and a piece for the bottom. The exact size of this bottom piece will depend upon the thickness of the wood used. Thus, if we use wood a quarter of an inch thick—which is a very good thickness—the bottom must be 3 inches by 8½ inches. With thin nails fasten the two sides to the back, and then nail the front into position. Now fix on the bottom. We next want a piece of wood, 11 inches by 9½ inches, for the lid. This is hinged on at the back of the box in such a way that it is flush at the back, but reaches out beyond the box all round on the other sides. The edge of the lid at the back must be beveled

CONTINUED FROM 5354

off to allow of its being opened. Before putting in the front we should make a round hole, varying in size according to the birds we wish to nest in the box. For small tits the hole should be not more than 1½ inches in diameter; for great tits, robins, nuthatches, and flycatchers it should be 1½ inches; and for larger birds like starlings, 2 inches in diameter.



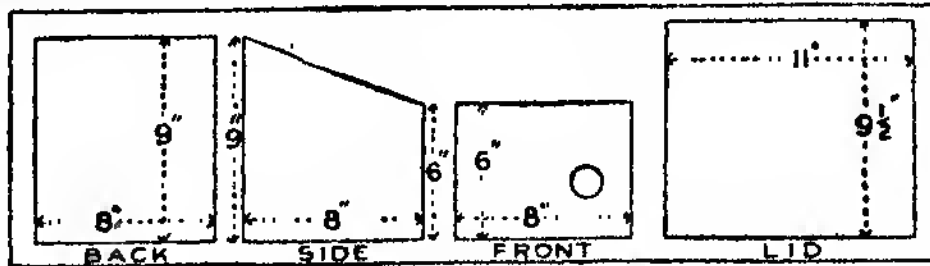
NESTING-BOX IN POSITION

We must now decide where to fix the box. If possible, the box should face north or east, and it should be fastened firmly by a nail, screw, or hook to a tree or wall, out of reach of cats and other creatures that prey on birds and their eggs. A good height up to fix the box is from 8 feet to 12 feet, and if it is on a tree it is well to fasten round the tree a broad band of zinc, which will prevent cats and other enemies from climbing up. The sloping roof will allow the

rain to run off, and will prevent cats lodging on the top and catching the birds as they go in or out. In a single garden, not very many miles from New York, different nesting-boxes were occupied by redstarts, great tits, orioles, nuthatches, tree sparrows, house sparrows, starlings, and wrens.

The birds, as soon as they have selected our box for a nesting-side, begin to build their

nest. Then the hen lays her eggs, and while she is sitting we may once or twice a day open the lid at the top and have a peep; but we must not disturb the bird too much. Later, the birds are hatched, and we can watch them until they fly away. Remember that birds usually come yearly to the same spot to make their nests.



HOW TO CUT THE WOOD FOR A NESTING-BOX

FLASHING MESSAGES AT NIGHT

BY following the instructions given below, anyone can make a little instrument by which he can flash messages to his friends at night across considerable distances. The idea of the instrument is something like that of the heliograph which soldiers use for sending messages to one another in daylight. The word heliograph really means to write by the sun, and the instrument consists of a little looking-glass that can be twisted about on a stand so as to catch the sunlight, and make flashes that are seen at a distant point.

The instrument we are going to make is very simple. First of all we obtain from the grocer a wooden box about a foot high by nine

inches wide, and nine inches deep; the box should have a hinged lid. Inside this we are going to place a lamp, so we bore in the top a few holes, half an inch in diameter, to allow the fumes or smoke to escape. Then in the bottom of the box, which will be the front when it is stood up on end for use, we make a round hole one inch in diameter. Now on the inside of the lid of the box we hang a reflector of some kind to strengthen the light. The reflector from an old kitchen lamp, polished up, will do very well, or even a piece of ordinary looking-glass.

We also want a shutter on the front of the box that can be used to open and close the round hole through which we shall flash our messages. The best thing for the shutter is a piece of sheet zinc, that can be bought at a hardware store for a penny or two. The shopkeeper will cut the zinc to the size and shape required. It should be of the shape shown in the picture, and should be about

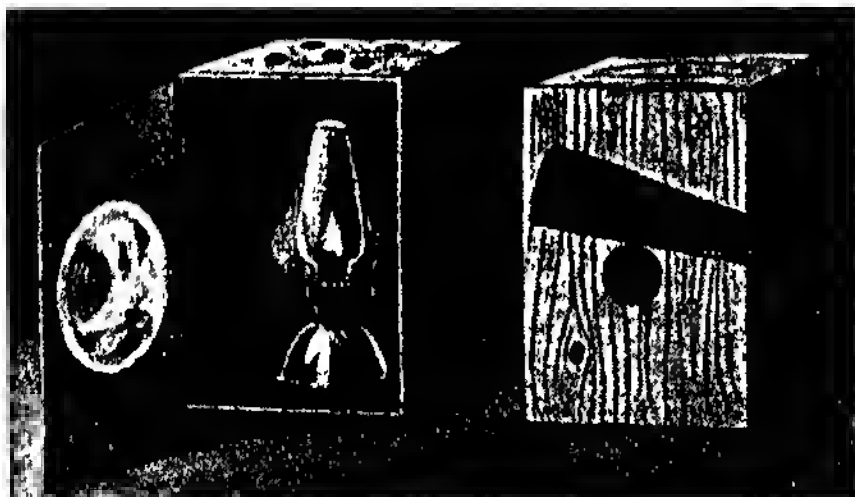
eight inches long and two and a half inches wide at its broadest end. A hole must be punched near the middle, and it is fixed in position, as shown in the picture, with a screw. The zinc must work quite easily and smoothly on the screw, otherwise there will be some difficulty in working the instrument.

Inside the box we place a lighted candle or small paraffin lamp, and our instrument is then ready for use. Any code of signals can be arranged between two friends, but the most sensible thing to use is the Morse alphabet, giving a short flash for a dot and a long flash for a dash. To make the flashes we hold the shutter by the handle, and work it up and down over the round hole. A little practise will make this quite easy.

Our friend, if he wishes to carry on a conversation with us over a distance, must have a similar instrument. With two flash-boxes it is possible for two friends to talk to one another by flashes at night across a distance of half a mile or more.

We begin by placing our boxes each in a window facing the window of the other, and a few rapid flashes indicate that we are going to begin the conversation. When a boy knows the Morse alphabet, which can be found in any encyclopædia, it is astonishing how quickly, with a little practise, he can flash out messages and read those that are flashed back.

This instrument is not a mere toy. To be able to send and read messages which are sent in this way is very necessary and useful. Scouts should make themselves a similar box, and practise this signaling until perfect.



BACK AND FRONT OF THE FLASHING BOX

THE RIGHT WAY TO USE A LIFEBOUY

IN case we may ever be in circumstances where we should need a lifebuoy, it is well that we should know exactly how to use it. It is of very little use to seize the lifebuoy with the hands and merely hold on to it from the outside. We need to get inside the circle with our arms resting on top of the lifebuoy, and then we get the full value of its support in the water. The best method of getting into the buoy is to seize one side of it with both the hands as shown in the picture, and then to press down that side of the buoy so that it does a somersault. If at the moment the

buoy turns over with the pressure of our hands on one side we duck our head, the buoy will pass over the head, and all we have to do then is to draw our arms up and out on top. If we can get hold of a lifebuoy for a short time in a swimming pool, it is interesting to practise getting into it in the way described, and it certainly requires some little practise. Many persons have got into disastrous difficulties through not knowing this simple rule.

They have tried all sorts of ways of getting into the lifebuoy, usually without success, and then failure has led to really serious trouble.



PUTTING ON A LIFEBELT



TWO CURIOUS KINDS OF PICTURES

MOST of us have seen those long-drawn-out and distorted pictures which appear at first sight to represent nothing in particular, but when held close to the eye and looked at horizontally show a clear and normal picture. These distorted drawings are not made haphazard, but are produced from proper pictures by a scientific plan, that must be worked out in a mathematically correct manner. Very few people know how to make a distorted drawing from an ordinary picture, and yet it is quite easy, and can be done by any boy or girl who exercises ordinary care, intelligence, and patience.

First of all we take the normal picture, which may be either an outline picture from a book or paper or a drawing made by ourselves. Round this we draw a square, A B C D, as in picture 1. Then we divide the sides A B and A C into six equal parts, and draw lines perpendicularly and horizontally, so as to divide the whole square into thirty-six equal and smaller squares.

Now we draw another line, E L, equal in length to A B, and divide this also into six equal parts. From the middle point, H, we draw a line, H M, at right angles to E L, and the line H M may be any length. The greater the length of this line the greater will be the distortion of our freak picture. A very convenient and suitable length for the line is about three times the length of the line E L.

Now we draw straight lines from M to each of the other points in the line E L, and from M we draw a line M N to the left of M. This should be parallel to E L, and about half the length of that line, although it may vary a great deal, for the distance from M to N is really the distance of the point above M from which we shall have to view our distorted picture to bring it back to the normal proportions.

The effect of making the line M N greater or less is to produce a distorted picture that will have to be viewed from a greater or less height. Join N and L by a straight line, and where it cuts M E, at the point O, draw the line O P parallel to E L. Then, where N L cuts the other lines, F M, G M, H M, J M, K M, draw lines parallel to E L, as shown in picture 2. We now have a four-sided figure, E L O P,

divided into thirty-six sections. These correspond to the thirty-six sections of A B C D, and all we have to do is to draw in each section of E L O P that portion of the picture which appears in its corresponding section in A B C D, taking care to elongate, or stretch out, the lines of the drawing to fill the space, and join up with that part of the drawing which comes in the next section. Pictures 1 and 2 will show how this is done, and we can compare the normal and the distorted pictures, section by section.

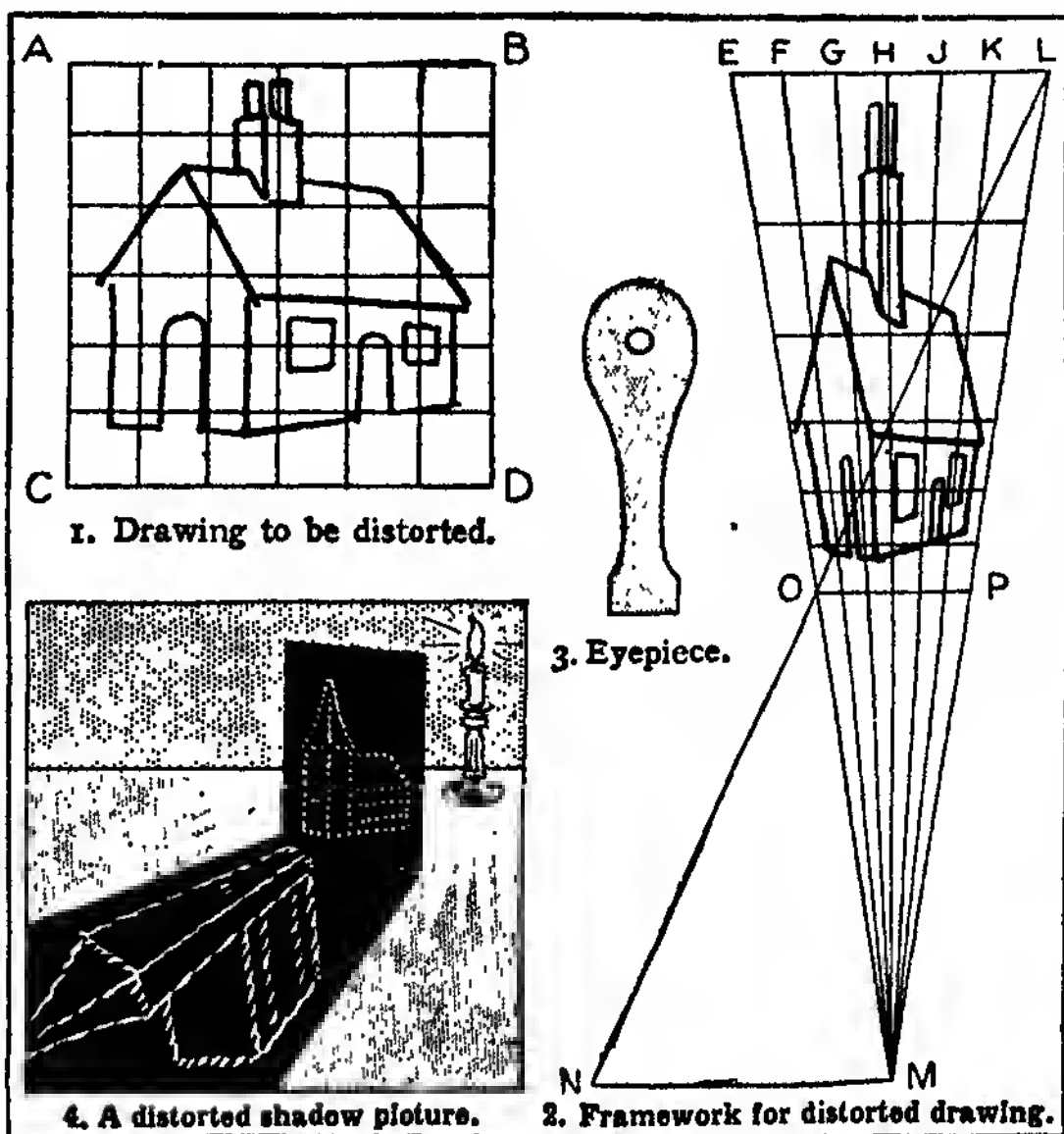
To view the distorted picture in such a way as to bring it back to its proper shape, we cut out a little strip of card, as in picture 3, and, pricking a hole with a large pin or bodkin, we look through this hole at the distorted picture, taking care to keep the little card,

or view-finder, as high above M as N is distant from M. Of course, we can draw our framework for the picture in thin pencil-lines, and then, when we have drawn and inked in our distorted sketch, we can rub out the pencil-lines, so that only the picture is left.

The proper name for these curious optical drawings is anamorphoses, a word which looks very difficult, but is really made up of two Greek words meaning to form again. There is another very good way of

making a distorted picture. We sketch the design or object upon a piece of white cardboard, and then prick all the lines with a fine pin or needle, so that the whole picture is outlined in every part by a series of small, clean holes going right through the cardboard as in picture 4. We then fix the card in a perpendicular position, with a strong light behind it.

On the table in front of the pricked card we lay another white card, and the lines of light made by the rays of light shining through the holes in the upright card form a distorted representation of the pricked picture. We draw over this distorted picture with a pencil or pen, and then, in order to view the picture properly so that it will appear to be normal, we must look through a view-finder with the eyehole placed exactly at the spot where the light was when we drew the distorted picture.



DIFFERENT METHODS OF DRAWING DISTORTED PICTURES




THE BEAR AND THE LITTLE WOLF

A LITTLE PLAY FOR THE NURSERY

Persons in the Play: THE BEAR. THE LITTLE WOLF

ACT I

Scene: A road by a field. The Bear enters on one side, the Wolf on the other



THE BEAR: *appearing to be pleasantly surprised* Well met, brother. I was wishing to find Someone to help with a plan in my mind.

LITTLE WOLF: *showing interest* Well met, brother; and what is your plan? I'm sure I'll be glad to help if I can.

THE BEAR: *pointing toward field* Yonder field is ploughed for planting with corn. Would you help me to plant to-morrow morn?

LITTLE WOLF: Why, yes, I shall help if you will divide All the crop that ripens as I decide.

THE BEAR: Well, how would you like to take one half? That would be fair, and neither could laugh.

LITTLE WOLF: Yes, that would be fair, and I agree That the half of the crop shall be my fee.

THE BEAR: *with an air of knowledge* You know that 'tis said the roots of the plants Go far down beneath the nest of the ants.

LITTLE WOLF: *innocently* Yes, so I have heard; 'tis wonderful indeed So much should be roots and so little seed.

THE BEAR: Would you like for your share the half below ground, Together with stalks that above it are found?


LITTLE WOLF: *offering his hand—or paw* Yes, content I shall be so to divide, And thus we'll arrange I now do decide.

THE BEAR: *shaking hands with Little Wolf* We agree, then, that I shall have only the ears, A plan, I must say, that leaves me with fears.

CURTAIN

ACT II

Scene: The same. The Bear beside a pile of ears of corn: Little Wolf beside a pile of cornstalks



LITTLE WOLF: *very meekly* I am sure, Brother Bear, you did not intend To rob me, and thus to the poorhouse to send.

THE BEAR: *affecting surprise* Why do you thus my intentions deride? You know you yourself were left to decide.

LITTLE WOLF: *indignantly* The roots are but trash, and the stalks as well Are only for burning, and not to sell.

THE BEAR: Well, next year, my friend, the game we shall change, And you shall have what you like to arrange.

LITTLE WOLF: Of this, then, be sure, I never shall choose The worthless old roots that I cannot use.

Both walk off in opposite directions

CURTAIN



POOR HOUSE

ACT III

Scene: The same. Time, a year from first meeting. Enter the Bear on one side, Little Wolf on the other

THE BEAR: in a friendly way Well met, Brother Wolf; so we meet again
To talk of the crop we shall plant on the plain.

LITTLE WOLF: Well met, brother. Yes, I would fain
Talk over what part of it I may gain.

THE BEAR: When last we met, if I do not forget,
On the part above ground your heart was set.

LITTLE WOLF: What you say is true, and you may prepare
In planning the crop if that be my share.

THE BEAR: slyly All right, Brother Wolf; then, what would you say
To potatoes, a crop that is sure to pay?

LITTLE WOLF: Yes, potatoes are good, and agree I would
That they be planted and gathered for food.

THE BEAR: Very well, Brother Wolf, to-morrow morn
We shall plant them where once grew the corn.

Shaking hands over the bargain, they go off at opposite sides
CURTAIN

ACT IV

Scene: Same, four months later The Bear beside a pile of potatoes, the Little Wolf beside a heap of dead potato stalks

THE BEAR: in a lively and humorous way How now, brother? Why so sad?
Are you ill, or is the crop so bad?

LITTLE WOLF: speaking sadly You know very well the crop is quite sound,
But you have taken all we have found.

THE BEAR: I have taken no more than what you said
Should be mine to take in the game we played.

LITTLE WOLF: in a melancholy manner These stalks are worse than those of corn;
To the poorhouse I go to-morrow morn.

THE BEAR: Oh, no, Brother Wolf, you must not despair,
For I still desire to treat you quite fair.

LITTLE WOLF: brightening up at this How now, Brother Bear? Would you divide
That pile of potatoes there by your side?

THE BEAR: Certainly, brother; I willingly give
One half, in order that near me you may live.

LITTLE WOLF: with every evidence of thankfulness It is good of you, Brother Bear, to reward
A stupid like me who forgets his own word.

They then move towards the potato pile like the good friends they are
CURTAIN

HOW TO KEEP A HISTORY NOTEBOOK

WE have from time to time learned much of the world's history. How can we fix in our memories the order in which the nations rose and fell, and marshal the procession of mighty men through the centuries?

Here is a simple plan which many have found useful and interesting.

Let us take an ordinary exercise book and rule a thick, black line down its middle opening. Along the line let us write: Time of the Birth of Christ. Then let us head twenty pages after the line thus: 1st century A.D., 2nd century A.D., up to 20th century A.D., reflecting that each page stands for 100 years.

Perhaps before going any farther we may like to jot down a few entries in the centuries to which they belong, such as Edward VII., near the beginning of the twentieth century; the opening of the first railway in America

upwards, because time is reckoned backwards from the birth of Christ, and 100 B.C. is an earlier date than 1 B.C. If any difficulty is felt about this, we can number a few of the B.C. centuries, taking care that 50 comes about the middle of the page, and 75 and 25 at the first and last quarters.

Let us fill in a few of the names we know well, passing backwards into the mists of time.

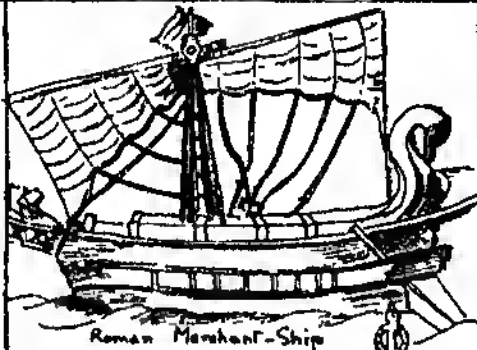




We have Julius Cæsar in the middle of the 1st century B.C.; Alexander in the last quarter of the 4th; the soul-stirring names of Marathon and Thermopylæ in the beginning of the 5th, and so on.





Many of the century pages in the long stretch of years will remain empty of names, even after we have read many books and studied in many museums. From time to time, too, we may have to make changes in our

TWO PAGES FROM THE HISTORY NOTEBOOK

1st Century B.C.

1st Century A.D.

100		
95		
90		
85		
80		
75	Cicero Pompey	
70		
65		
60		
55		
50	Julius Caesar	
45		
40		
35		
30	Death of Cleopatra Egypt a Roman Province	
25	Augustus	
20		
15		
10		
5		
1		 Roman Fibula
		 Roman Sandal

1		
5		
10		
14		
15	Tiberius	
20		
25		
30		
35		
37	Caligula	
40	Claudius	
43	Conquest of Britain begun	
45		
50		
55		
60	Boadicea's Insurrection	
65		
69	Vespasian	
70	Fall of Jerusalem	
75		
79	Titus - Destruction of Pompeii	
80		
85		
90		
95		
98	Trajan	
100		

before the middle of the nineteenth century; the French Revolution towards the end of the eighteenth; England a commonwealth in the middle of the seventeenth; Spenser, Shakespeare, Francis Drake, the Armada, all in the last quarter of the sixteenth; the departure of the Romans from Britain and the arrival of the English in the fifth; the Conquest of Britain in the first; as well as notices of names and events in the rest of the world.

Next, let us turn to the centuries before Christ and head the pages before the black line, 1st century B.C., 2nd century B.C., and so on back and back till we come to the 55th near the beginning of the book. Each page, as before, stands for 100 years, and, as before, the beginning of each century is at the top of each page, though, as we are dealing with years before Christ, we number from the bottom

pages, for constantly new finds of old treasures upset dates that have long been thought correct.

It adds immensely to the interest of our History Notebook if we can illustrate its pages with sketches of our own, drawn from objects in the museums or from pictures; we can also collect small pictures and fasten them on the century page to which they belong in the manner shown in the specimen pages that are given.

On the pages after the 20th century A.D. can be drawn maps of the countries in the different stages of their history, also plans of the great cities, and of the battles of the world at different stages of their progress.

If there are any spare pages at the beginning of the book, we can put in them drawings or photographs of the various prehistoric implements which belong to the distant ages before history came to be recorded in writing.

THE PUZZLES OF THE WIZARD KING

1. TRANSPOSITIONS

Complete, I am a letter strongly pronounced ;
behead twice, I am a robber ; hehead again,
I am angry ; behead again, I value ; hehead
again, I am the past tense of a verb meaning
to devour ; curtail, I am a preposition ;
restore to "value" and transpose, I lacerate ;
curtail, I am a beverage ; restore to "lacerate"
and hehead, I am part of the head ; trans-
pose, I am a space of time ; restore to
"value" and curtail, I am an animal ; reverse,
I am a sailor.

2. SINGLE ACROSTIC

My initials will form the name of a great statesman.

(a) A game ; (b) a flower ; (c) an animal ;
(d) a weapon ; (e) a bag ; (f) a town in France ;
(g) a precious stone ; (h) a girl's name ; (i)
a tree.

3. THE DINER'S REPLY

A gentleman was seen coming out of a restaurant by a friend, who said to him :

"Well, did you have a good meal?"

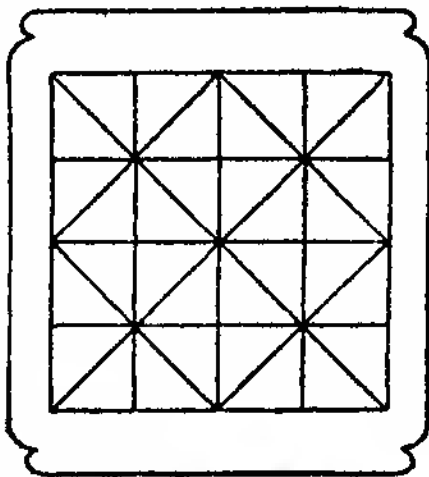
The gentleman replied in the following curious way :

"I so."

Can you say what he meant?

4. THE MAGIC SEAL

This strange seal was used by an Eastern king upon all his state documents, and it was a favorite habit of his to ask all who came to the court, and those to whom he sent letters and commands, to count the number of triangles of all sizes in the square design in the middle of the seal. The courtiers spent a great deal of their time trying to solve the problem that had been set. Some gave one number and some another. How many triangles are there?



The king's seal.

5. RIDDLE-ME-REE

My first is in mountain, hut not in hill ;
My second's in river, hut not in rill ;
My third is in corn, hut not in rice ;
My fourth is in snow, hut not in ice ;
My fifth is in rye, hut not in oat ;
My sixth is in ship, hut not in boat ;
My seventh's in stone, hut not in slate ;
My eighth is in soon, hut not in late ;
My whole, no doubt, will plainly show
A poet great we all do know.

6. ENIGMA

The poet Schiller wrote this verse. Can you guess what he means?

A bridge weaves its arch with pearl
High over the tranquil sea.

In a moment it unfurls

Its span, unhounded, free.

The tallest ship, with swelling sail,

May pass 'neath its arch with ease,

It carries no burden, 'tis too frail,

And when you approach it flees.

With the flood it comes, with the rain it goes,

And what it is made of nobody knows.

7. DOUBLE ACROSTIC

My initials give a poet, if you read them with ease ;

Finally, one of his poems, which many will please.

1. A bold, daring person, who goes forth for fame.
2. With meadow or prairie you will find this the same.
3. To ensnare or beguile by this word is said.
4. And Socrates wooed her when she was a maid.
5. A poet of Italy next you must find.
6. Merriment reversed, at least to my mind.
7. A very simple thing, easy to write.
8. One or t'other, not both, this word doth indite.
9. Full of guilt, but conscience-struck.
10. To jerk, to tug, it is my luck.
11. A lake that bathes Canadian shore.
12. Palsied like this, my last I could not reach.
13. As in the wild, the ground it hurries o'er.

8. CHARADES

My first may spring from a grey goose wing ;

A king is but my second ;

Of the works of men my third has been

The bravest object reckoned.

And without my first my whole would be

A thing unknown to you and to me.

9. THE PUZZLING BIRDS

Two birds were talking one fine day,

About each other's names.

The one cried out : "Now come let's play
At little children's games."

"Done!" cried the other, "but I've no head
For puzzles, you'll agree ;

Give me your head, and have instead
The head that owneth me."

The first agreed, and his looks sable

Part of a ship became !

The other was a vegetable,

And neither knew his name !

What were the birds ?

10. BURIED FLOWERS

Shall I put this scrap in Kate's album ?

Tell your father I called to see him.

What lovely hair ! I should like mine to
curl like it.

If that man is insane, money should not be
given him.

My cousin Ada is your sister-in-law.

My brother is gone to Japan, Syria, and
India.

Will Mr. Carlo be liable for this ?

Hark ! how Tom and Sarah are bellowing in
the nursery.

I read to that poor negro several times a week.

This case is urgent ; I anticipate a good sum.

11. TWO SHORT YEARS

Why was the year 1888 so short ? If you
know, can you say why the year 1889 was
shorter still ?

12. SQUARE WORDS

1. A hunt ; a hut ; to take advantage of ;
a French river ; a girl's name.
2. Not wild ; a field ; to signify ; an Irish lake.

PUZZLES OF THE WIZARD KING

13. CONUNDRUMS

What is the only thing that can live in the midst of fire?

When may a bird be said to occupy a feather bed?

Which is the longest letter in the alphabet?

Which word is shorter for having a syllable added to it?

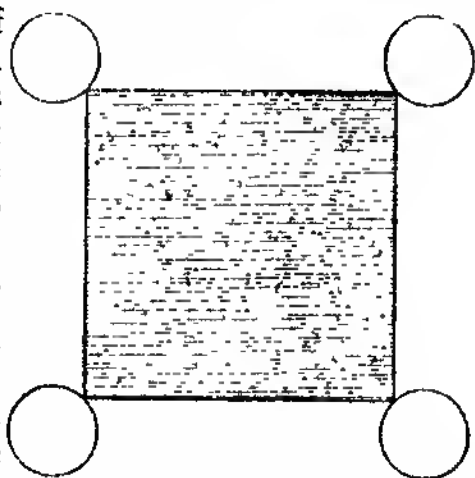
What is that which by losing an eye has nothing left but a nose?

Which is the best way to make a coat last?

What is that which nobody wishes to have and nobody likes to lose?

14. THE FIELD AND THE PONDS

A farmer who had a square field with a round pond at each corner of it was anxious to double the size of the field and still have the four ponds on the borders of the field. But he wanted to keep the field square in shape. This is a diagram of the fields and ponds as they were originally. How did the farmer double the size of the field, keep it square, and yet manage to have the four ponds on the borders, as he wished to do?



ANSWERS TO PUZZLES ON PAGES 5451 AND 5452

1. Spokes: 1. Iota; 2. Idyl; 3. Ibis; 4. Iron; 5. Idol; 6. Isis; 7. Iris; 8. Isle. Tyre: "Alps on Alps arise." Pope.

Inner Circles: 1. Try, and you will soon find it all. 2. Oh do be sure to discover this all.

2. Begin with the first bracketed words, and then read the words above and so on.

Do not covet all you see, for he who covets all he sees often wants more than he sees.

Do not tell all you hear, for he who tells all he hears often tells more than he hears.

Do not spend all you have, for he who spends all he has often spends more than he has.

HOW TO MOVE A PENNY WITHOUT TOUCHING IT

THERE are many coin tricks with which we can amuse ourselves and entertain our friends, and one of the simplest is that of moving a penny without touching it. To perform this trick we require five or six coins; pennies or any other coins will do.

We should see that the table has a smooth surface, otherwise the trick will not work successfully. Placing a penny on the table, we ask the company present: "Can anyone move this coin without pushing the table, or touching the coin with the body, or with anything held in the hand or mouth, and without blowing it?"

Someone is almost sure to say that the thing is impossible, whereupon we inform them that the trick is quite easy, and proceed to show them how it is done.

We take four or five other coins, and place them all in a line at the edge of the table.

Do not say all you know, for he who says all he knows often says more than he knows.

3. Roach, shad, cod, herring, turbot, barbel.

4. BLIND
LOVER
IVORY
NERVE
DRYER

5. A river.

6. Cowslip—Buttercup.

7. The diagram shows the course of the pen. In order to make this clear, spaces are left

R O B R O Y

where the lines should be extended so as to meet.

8. Between the dark and the daylight,
When the night is beginning to lower,
Comes a pause in the day's occupations
That is known as the children's hour.

9. Leaves, eaves, aves, save.

10. The squirrel takes out one ear of corn each day, and his own two ears.

11. The letters are, L, B, T, O, D, J (jay), P and A (aye).

12. (a) Titus Andronicus; (b) William Shakespeare; (c) Cornelius; (d) Cleopatra; (e) Duchess of Gloster; (f) John of Gaunt; (g) Coriolanus; (h) Andromache.

A SHORT CUT IN ARITHMETIC

Here is an easy way to multiply together any two numbers between twelve and twenty. First multiply together the units digits (or the right hand figures), and write down the result. Then add one of the numbers and the unit digit of the other. Write down this result underneath the first result and one place to the left, and add these two. For instance to multiply 18 and 14:

Multiply the unit digits (the figures on the right)	8	4	32
Add one number to the unit digit of the other	18	4	22
			252

Each coin must just touch the coin adjoining, and the coin that we are to move without touching must be the last coin at the left-hand end of the line. The great thing to bear in mind is that all the coins must touch.

We then press firmly on the coin at the right-hand end of the line, so that it is impossible to move it. Then we take another coin, and, pressing upon it with the first finger of the right hand, we slide it along quickly so that it gives a smart tap to the coin that we are holding down. Instantly the coin at the other end of the line will move along an inch or two, although the coin that we tapped has not moved at all.

The reason why the end coin behaves in this manner is easily explained. When the first coin is struck, energy is imparted to the struck coin, and this energy is transmitted from one coin to another until the end coin, having nothing to stop its progress, moves along.

A CLUNY LACE TABLECLOTH

WE have all seen Cluny lace; if we do not recognize it under that name, we shall quickly learn to detect it once our interest has been aroused and its charm appreciated.

Cluny lace is a new name for the earliest French bobbin lace which in the sixteenth century was called *passement*. The name is derived from the famous Cluny museum in

Paris (about which you read in the "Holiday in Paris"), where examples of ancient laces are still preserved. This Cluny or *passement* lace is still made in the department of Auvergne in Southern France. The earliest laces were of gold and silver threads. The patterns to-day have changed very little, being still geometric, with formal floral forms and star-like centres. In Auvergne at the present time this lace-making is one of the chief industries.

Nearly 200,000 women, living simple lives in the mountains, add to their small income in this way. They are able quickly to follow the fashions, since they can vary the materials with which they work, silk, worsted, and goat's or even rabbit's hair being employed with equal facility. The old gold and silver laces are still made, but of course in greatly diminished quantities, since this form of the fabric is no longer used on men's dresses.

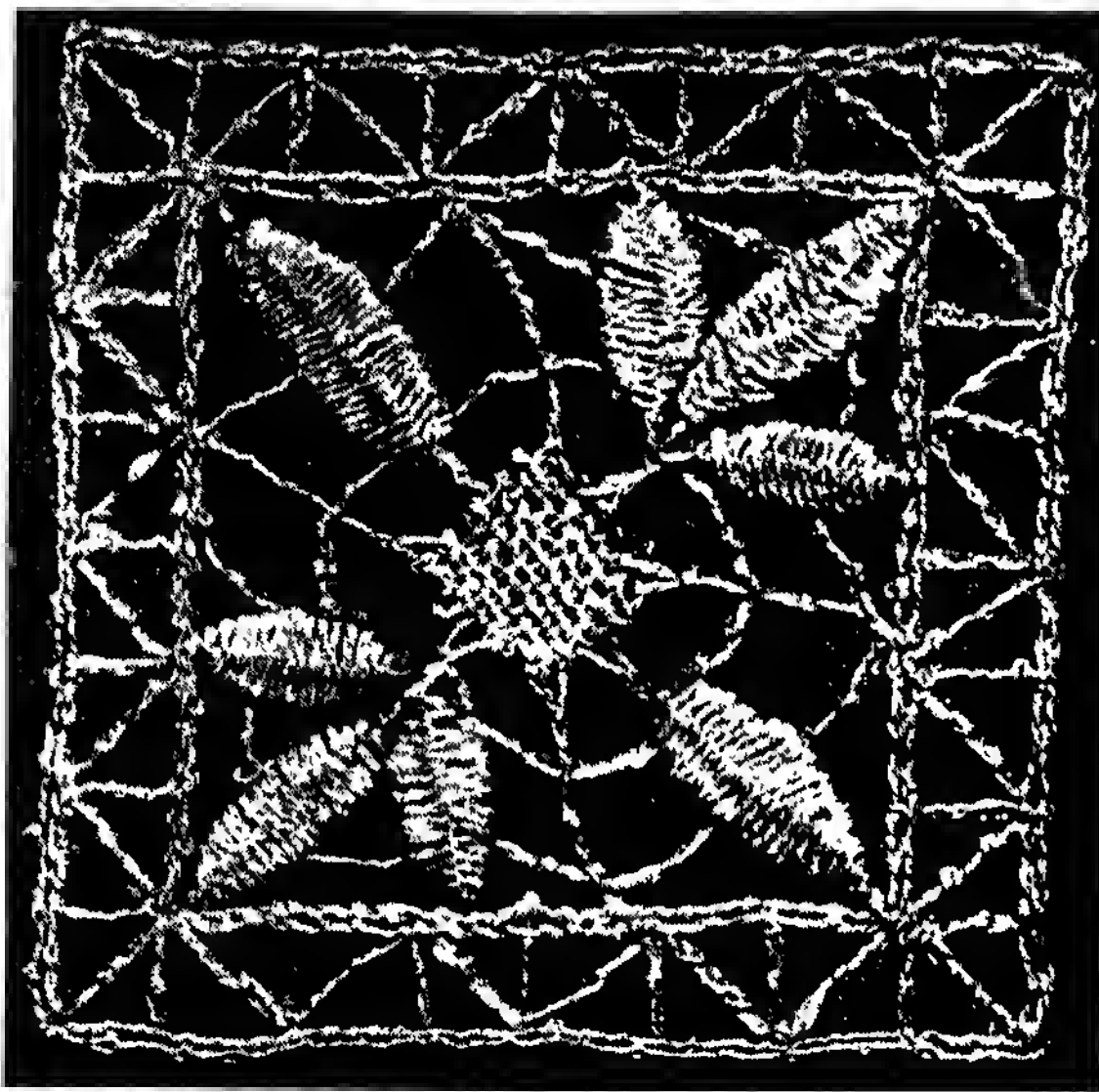
In the seventeenth century, because of the large number of women engaged in the lace trade, there was great difficulty in obtaining domestic servants, and the general fashion for all classes to wear lace caused the distinction between high and low to disappear. Accordingly, a law was passed in 1640 forbidding any man or woman of whatever position to wear lace upon their clothes. In a word, the trade was swept away by the whim of parliament. Father Régis, a Jesuit priest, who was then in the district, did his best to console the sufferers thus reduced to beggary by the passing of this law. He did more. By his arguments he obtained a repeal of the edict, and at his suggestion the Jesuits

opened to the Auvergne laces a new market in Spain and the New World. The Jesuit Father was later canonized for his good deeds. Under his new title of Saint François Régis he is still held in the greatest veneration by the women of Auvergne, as patron saint of the lace-makers.

This example is made of linen thread, and the

design shows little details, rather like daisy petals, fixed into a decorative network of finer threads, while parts of the lace are interlaced like darning.

Now, to make this lace requires some skill, but to embroider on to a linen foundation the stitches which represent it is not a difficult task. When a piece of Cluny is used as a tablecloth it is naturally placed on a dark ground to show up the pattern; we are going to make our lace right on to the dark ground, which will sup-

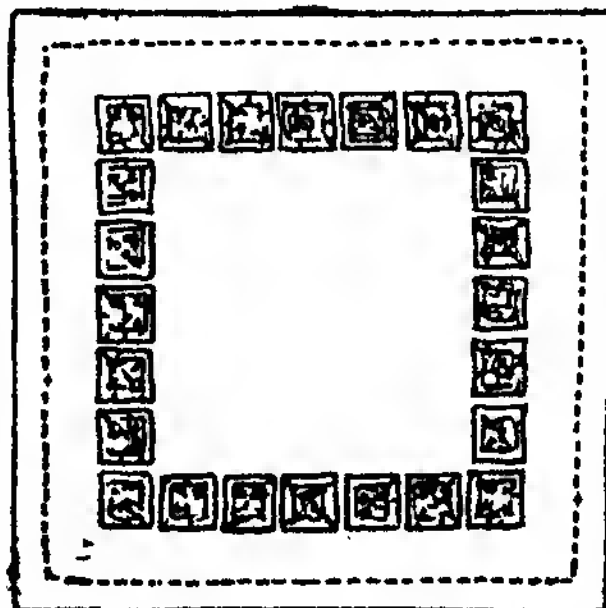


THE DESIGN FOR THE TABLECLOTH PATTERN

port it and always keep it in shape.

Real Cluny, when washed, inclines to pucker and shrink; in fact, its delicate curves and lines are never the same again. Ours will not suffer in this way, but will wash well and easily.

We shall get some hyacinth-blue linen—a deep shade, not a pale one—and a skein of linen thread, either white or unbleached, and make a tablecloth by using a number of lace squares arranged to form a border. In the picture twenty-four are used, but there is no reason why we should not make it smaller or bigger to fit our requirements. In any case, we shall not let the lace come too near the hem, which will be a wide one and hem-stitched, if we know how to do that; if not, we can hem it neatly in blue cotton



THE LACE BORDER

on the wrong side.

To transfer the pattern, we shall have to get a piece of transparent paper and trace it from this design—in outline only and as simply as possible. Next, with a stick of crayon or schoolroom chalk, we must rub all over the other side of the tracing, smooth the chalk well into the paper with the tips of the fingers,

shake off the loose dust, and our transfer is ready. We must lay it carefully on the blue linen, just where we have decided our lace shall come, pin it down to a board, and go over each line again with a pencil. Lift the paper and we find the design well defined on the linen in chalk. We dip a brush in white water-color paint, go over the lines quickly, and as soon as they are dry we can begin to work on that square.

The stitches are of the simplest—in fact, any we know can be used if they add to our “lace” effect. In this square, knot stitch is used for the straight lines, and the “petals” are done with a loose centre vein, composed of a straight thread, under and over which all the crossway stitches are slipped, exactly as one does the string on a parcel.

Knot stitch is the simplest form of art line stitch ever invented. Having started in the usual way, and finding our needle and thread at the beginning of a line on the right side of the stuff, we hold the thread with the left finger and thumb along the line we wish to cover, and fix it in place by a tiny crossway stitch, at right angles, taken in the linen exactly underneath the thread. We pull it all taut before releasing the left thumb and finger, and it “does itself” with incredible speed.

The irregular spot in the middle of the

square is common darning, which imitates exactly the texture of parts of the real Cluny lace of Auvergne.

The work has the charm of being easily and quickly done, and of being really artistic. Once we have learned to do it, we shall commence to observe patterns of Cluny lace, and to distinguish between them. Many of them are easily copied, and if we have even a small knowledge of drawing, we may vary our work.

This linen work is so strong that it may be used for many purposes. For instance, we may make a counterpane for a baby sister's crib, a washable cushion cover, or, if we work it on white linen, a cover for our bureau. If we have patience to do the work on soft cream-colored scrim, we may make a pair of very pretty curtains for a bedroom, or sitting-room window at small cost. Any of these things would be suitable for a Christmas present, and as the work is quite out of the ordinary run of fancy work, it would be very acceptable.

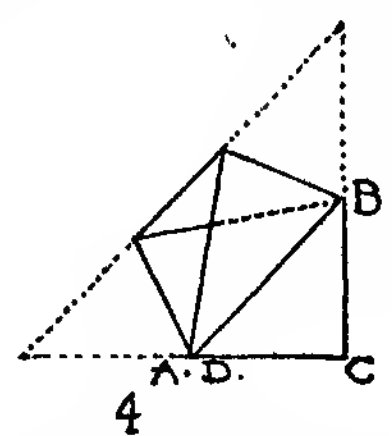
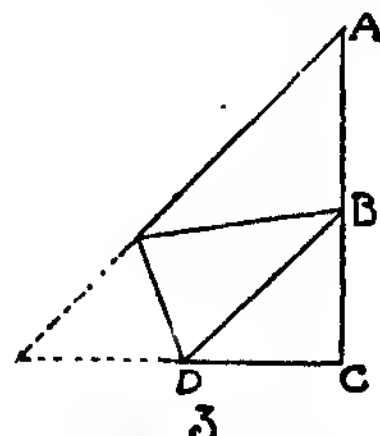
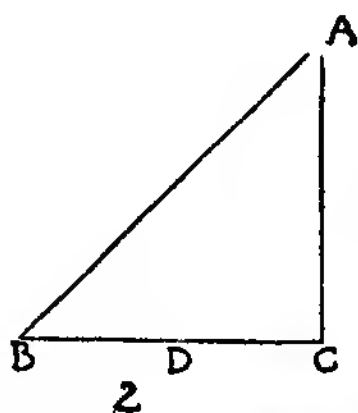
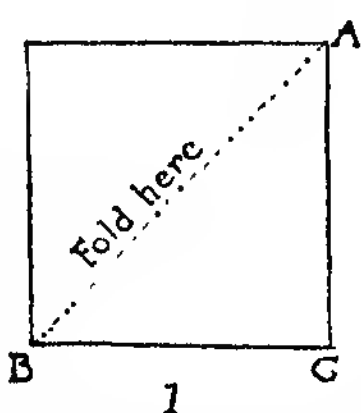
Thin waxed paper, of the sort that comes from the florist's, around flowers, is the best to use as tracing paper. It is tough and if well taken care of can be used quite a number of times. A good way to take a tracing from the pattern is to hold it firmly on the window-pane.

HOW TO MAKE A PAPER DRINKING CUP

ONE of the most useful articles on a picnic is a cup for drinking water, as some one is sure to be thirsty, and it is not always convenient to carry a glass with the lunch. A paper cup is very simple to make, and can be made in a minute or two from a single sheet of paper. Then, too, this kind of a cup is sanitary, for each person may have his individual cup. It is also useful

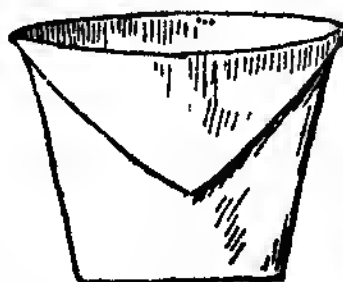
in such an emergency you will know just what to do, for you will quickly fold a square of paper into a handy water-tight cup.

This is the way to make it. Take a piece of writing-paper, or any stiff paper about eight inches square. Take the upper left-hand corner and fold it over to C, the lower right-hand corner, creasing on the centre line AB, to form a triangle. Find the middle



as an impromptu medicine cup, when a glass or teaspoon is not handy. And the best part of it all is that it does not have to be washed, for it is so easy to make a fresh one, and the cost is next to nothing.

If you practise making the little cup described here, then when you go on a picnic, or on a boat or train trip, or even on a tramp through the country, you will know how to make your own drinking cup. Sometimes when automobiling or driving, you come across a little stream, and wish you had a cup for a cooling drink. Next time



points of the sides AC and BC. Take the lower corner B, and fold it over to the point half-way between A and C, making the new edge, BD, parallel to the long edge of the triangle. Take the corresponding corner A and fold it in the same way to the point half-way between B and C. Then take one of the corners at C, and turn it into the little pocket made by the fold B, or simply fold it outside. Finally, take the other corner at C and fold it outside the cup. It is now complete.

THE NEXT THINGS TO MAKE AND DO ARE ON PAGE 5641.

The Book of FAMILIAR THINGS



A PAIR OF MAGNETS LIFTING STEEL GIRDERS THAT WEIGH SEVERAL TONS

THE WONDERFUL UNSEEN WORKER

MOST of us know something about magnets. The earth itself is one vast magnet. The magnetic force of the earth, passing, age upon age, through certain ores, has magnetized these and made them into natural magnets, which we call the loadstone. All this we know already, and we know also that we ourselves can transfer this magnetic power of the loadstone to iron and steel, and make magnets of these. Steel which has been so treated remains magnetized, so we call it a permanent magnet.

A magnet of this type is one of our good servants which do much work for nothing. It is a permanent magnet, or magnetized needle, which makes the mariner's compass, to guide our brave sailors about the world of waters.

People of old time knew something of the wonders of the loadstone, the natural magnet, and attributed to it powers more magical than those which writers of stories bestow upon the fairies. Savages generally worship anything which they fear or cannot understand; people in Europe used to do almost as foolish things,

CONTINUED FROM 5427

and especially was this so in regard to the loadstone. The amusing thing is that we, in these happier days, have magnets which, while they cannot perform the marvelous feats supposed to be performed of old by the loadstone, do really much more wonderful things than worshippers of the loadstone ever dreamed of. Of course, it is the magnet known as the electro-magnet of which we are now speaking.

The secret of its immense usefulness is that one moment it is a magnet of enormous strength, and the next it is simply a piece of unmagnetized iron. The permanent magnet is too faithful; like the lichen on a rock, it must go on clinging to that which it holds. So that, although it will pick up a needle or a cannon-ball, it will not put either down, but will go on holding it until its magnetism grows faint, and the weight of its burden becomes at last too heavy. It is like a badly-trained dog which will run and pick up a thing for us, but will not give it to us when we desire to have the article.

The electro-magnet is a giant which a little child can control and direct. We all know how it is made.

Big or little, and no matter what the pattern, the electro-magnet is always the same in principle. It is just a piece of soft iron wrapped about with wire. The wire is insulated, of course—that is to say, it is all carefully wrapped in silk or gutta-percha, or some other substance, so that when the electric current is turned on the wire shall not let that current escape. There it is, then, a core of soft iron—soft iron because this does not retain its magnetism—wrapped about with wire. It is still and lifeless until we want it. Suppose now that we do want it. Let us ask a little girl to set the mysterious helper to work.

She touches a switch, and turns on a current of electricity, which comes to the magnet by way of wires. These wires are connected with a dynamo which is generating electricity, it may be miles away. The moment the little girl turns on the switch the current flies through the wire in which the soft iron is wrapped, and, hey, presto! our soft iron has become a magnet of tremendous power. The electric current magnetizes the iron, and there is no natural magnet on earth so strong as that which our little girl places at our disposal.

What shall we do with it, now that we have got it? Here are tons and tons of pig-iron lying in a yard, waiting to be lifted into the railway trains which are to carry it from one end of the land to the other. It would take men days to do the work. We can do it as easily as we play a game. The magnet is fixed to a chain which is attached to a traveling crane. The magnet is lowered until it comes near the iron. Instantly these massive "pigs" of metal leap up as if they had awakened from sleep, and cling to the magnet as to their dearest friend.

The little girl gives a signal, and the engine-man makes the crane travel along its little overhead railway, carrying the magnet with its load of iron "pigs" with it. The burden is held over a car. The little girl touches the electric switch again, shuts off the current, and makes the magnet instantly cease to be a magnet, with the result that the pig-iron is no longer held up, but drops into its place in the car. Then the magnet travels back, is remagnetized, and brings back more pigs. In a very short time all the pig-iron is loaded into trucks, and the train is ready to start with its freight.

The lifting power is fixed by the size and nature of the magnet used and the strength of the electric current supplied.

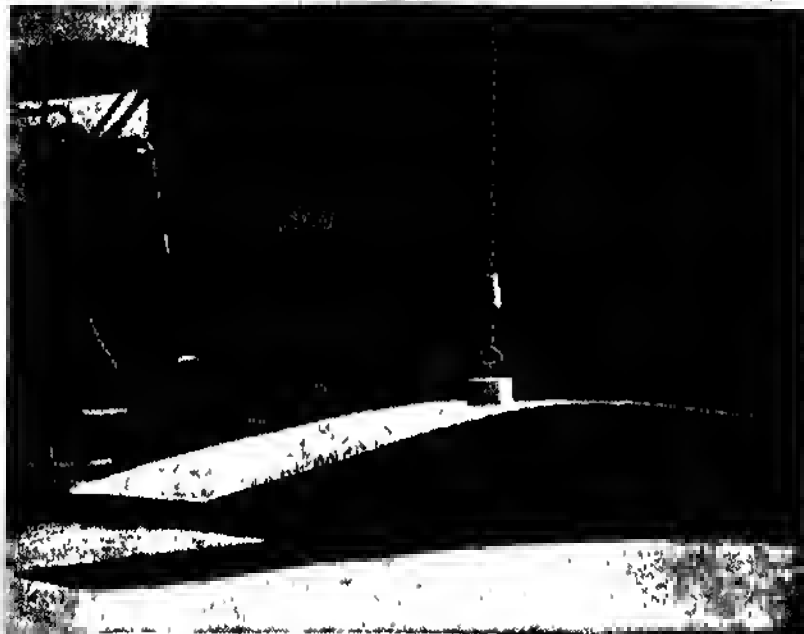
The child whom we imagine as controlling the electro-magnet is performing before our eyes a miracle far more wonderful than any animated by our forefathers, who bowed down before the loadstone. She has before her common iron and common wire, dead, seemingly useless material. She touches the switch, and puts into that wire and iron a something which seems to render the iron alive, as with a mighty power.

Our magnet can lift and carry and place things in position for us, releasing them immediately we wish. But it can also act as a ready and rapid destroyer. When machinery has served its purpose, it has to be broken up, "scrapped," as we say, so that the metal may go to the furnace and be converted into something new and beautiful. But it is very hard work to break it up. Our young friend with her electro-magnet comes again to our aid. She touches the switch, turns on the current, and makes the magnet pick up a mass of metal. By the help of the crane she raises it to a height, then switches off the current, and lets the metal fall. Crash!—the machinery is broken into fragments ready for the furnace.

During the progress of this work an unfortunate man gets a sharp fragment of metal driven into his flesh. Our young friend comforts him, and leads him away to another magnet. She places the point of this at the entrance to the wound, and turns on a gentle current of electricity. The iron becomes magnetized, and in an instant we find that the piece of metal has been drawn out of the wound by the magnet.

In the Great War, surgeons made similar use of magnets for drawing out fragments of shrapnel, and splinters of steel from wounds. The wearing of metal shields and helmets, although it often saved life, increased the number of casualties of this kind. The electro-magnet works for us in many other ways. Every journey performed by electric train or trolley or motor, every message sent by telegraph or telephone, every electric bell that is rung, is worked by means of an electro-magnet, one of the most wonderful helpers that man has summoned to the service of the world.

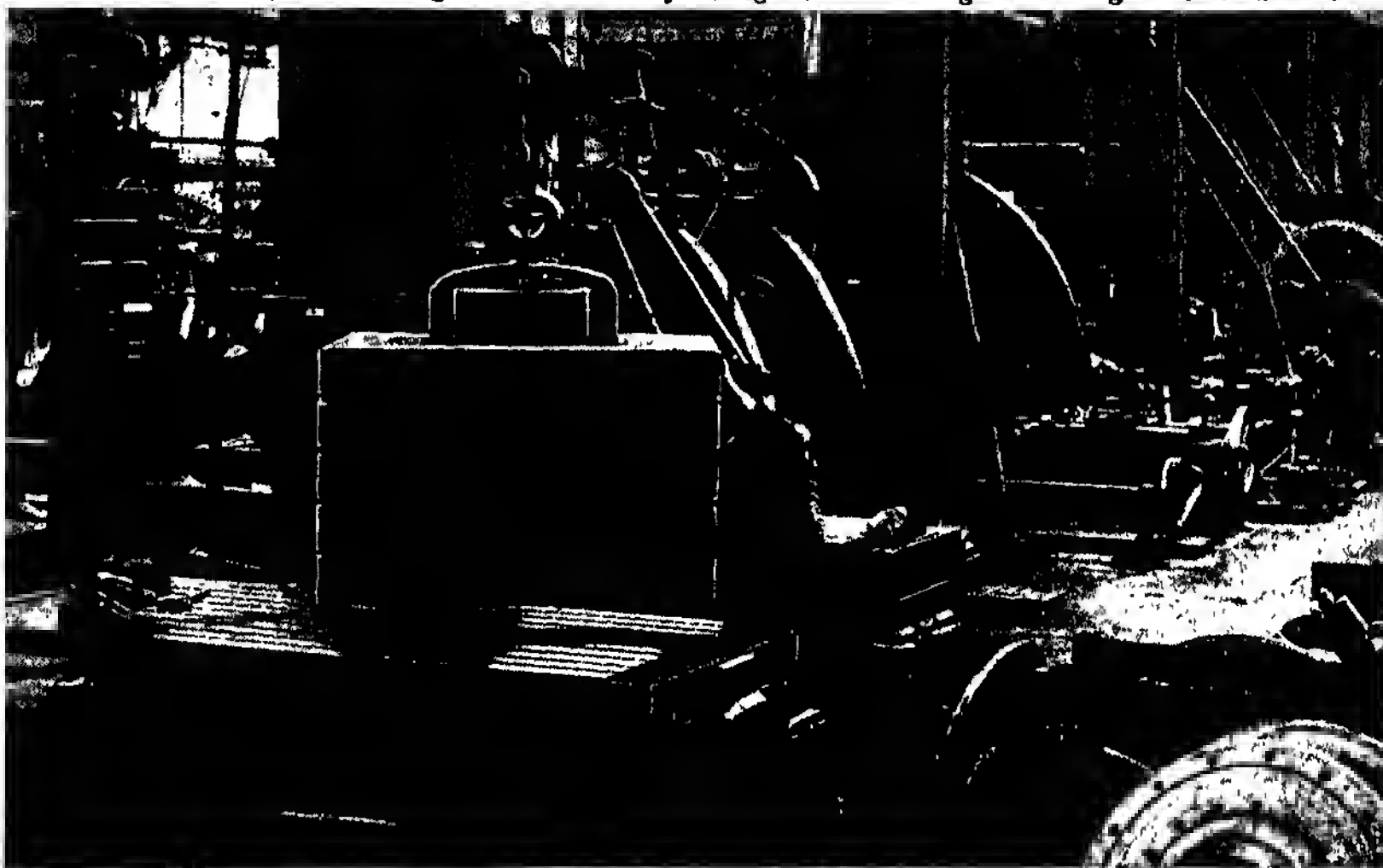
MAGNETS THAT DO THE WORK OF FIFTY MEN



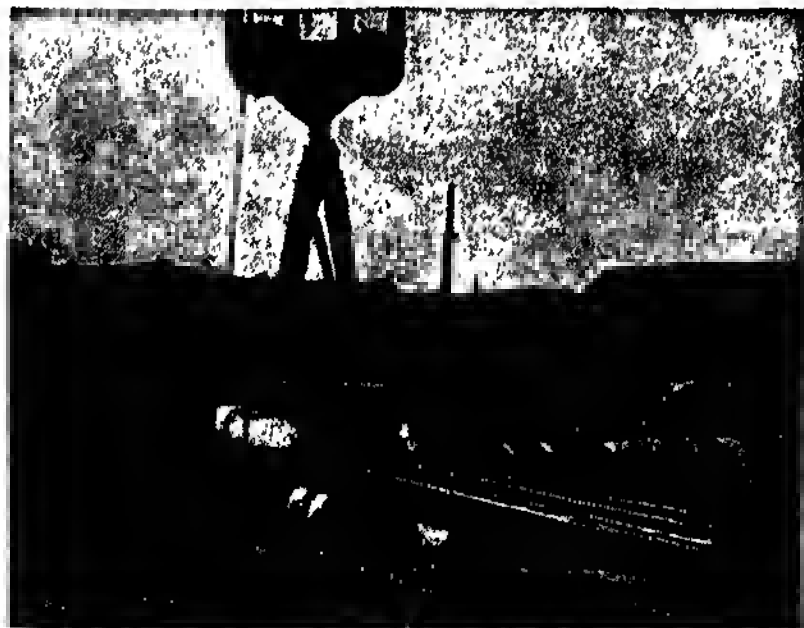
More and more of the lifting work in modern engineering works is done by powerful electro-magnets. They are particularly useful for lifting long, thin plates of steel, which are difficult to handle by means of ordinary chains and pulleys owing to their flexibility.



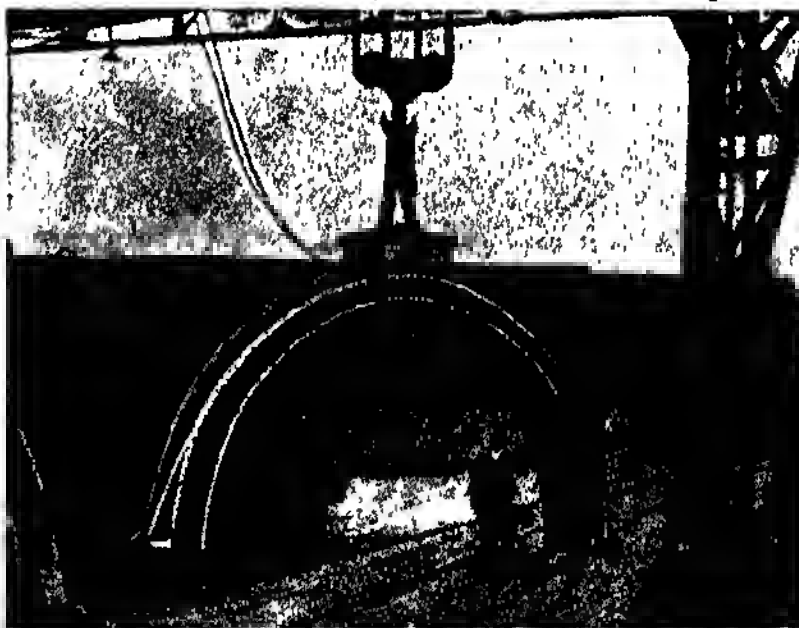
The most massive parts of machinery, many of which are inconvenient to move because of their awkward shape, are easily raised by an electro-magnet and conveyed by a traveling crane to any place. The magnet effects a great saving in time and labor.



The power of the magnet can be so regulated by the strength of the electric current that a number of pieces of iron and steel can be raised at one time, as seen in this picture, and then dropped one by one as required.

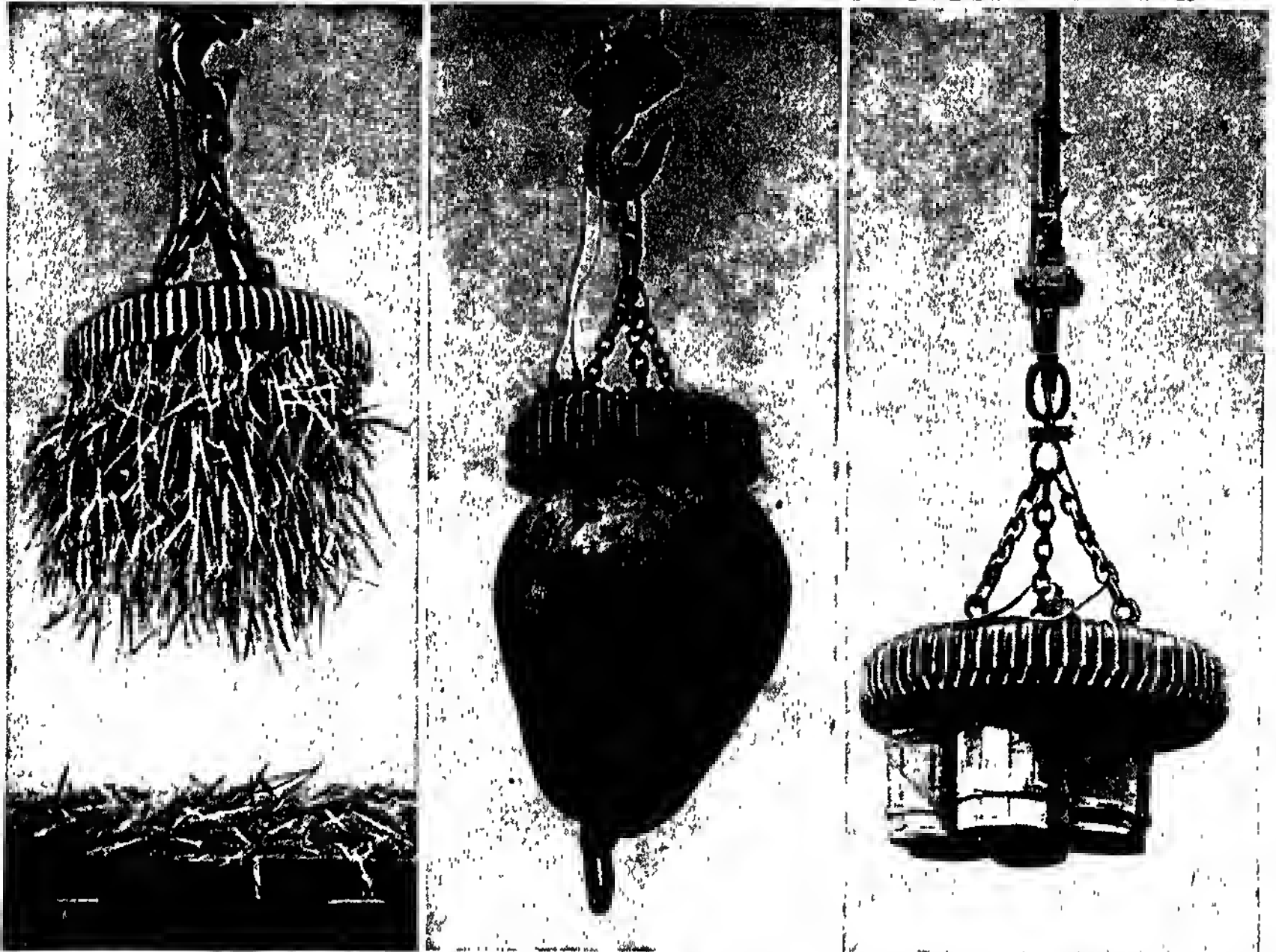


Girders had formerly to be raised separately, and there were many accidents among the men who handled them; now several girders can be lifted at once quite safely. Some magnets do the work of fifty men.

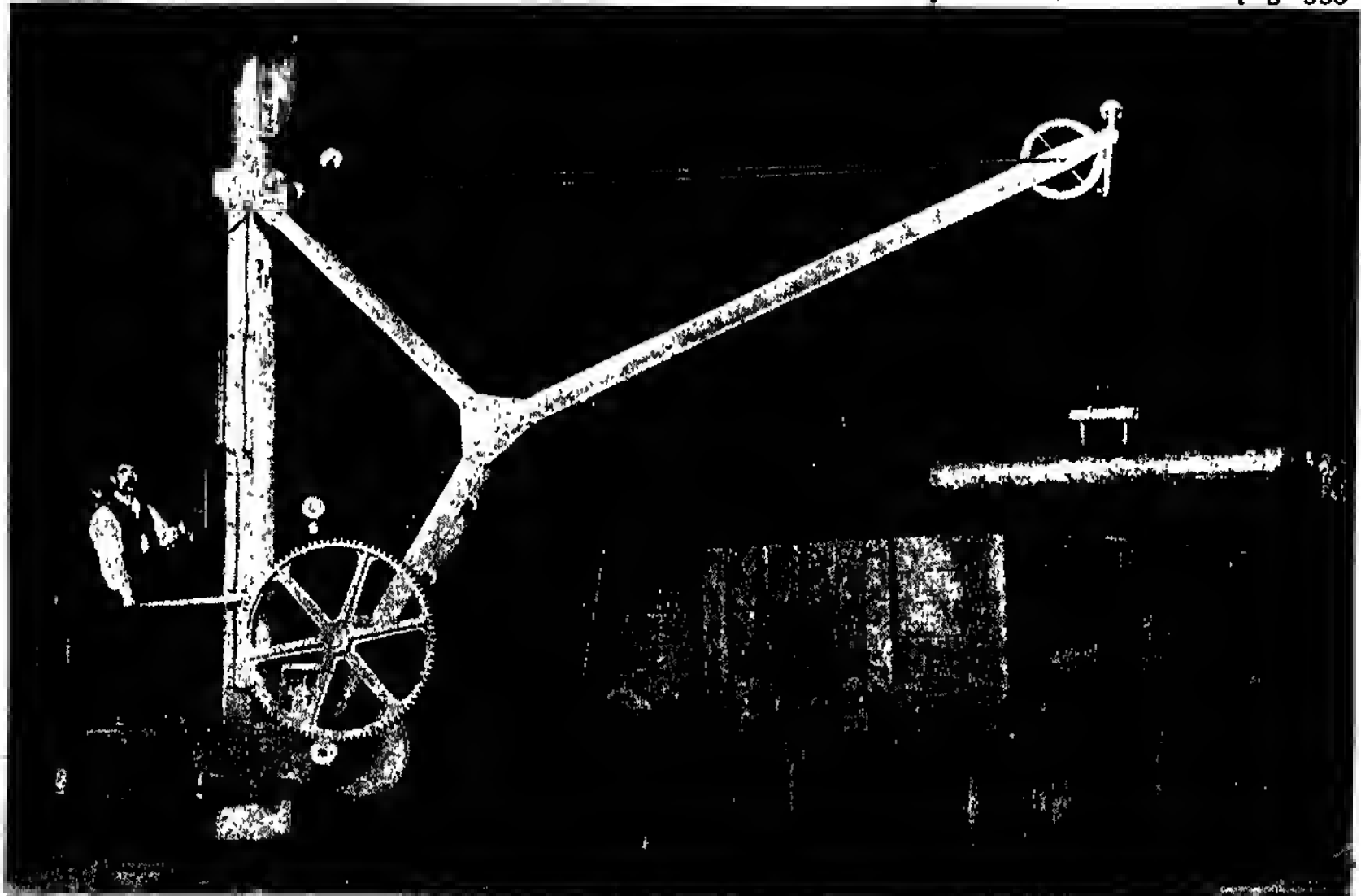


Great steel arches like those shown in the picture, weighing several tons each, were difficult to move by means of slings and hooks; now the electro-magnet handles them quite as easily as it does straight bars.

HOW THE GIANT MAGNETS ARE USED

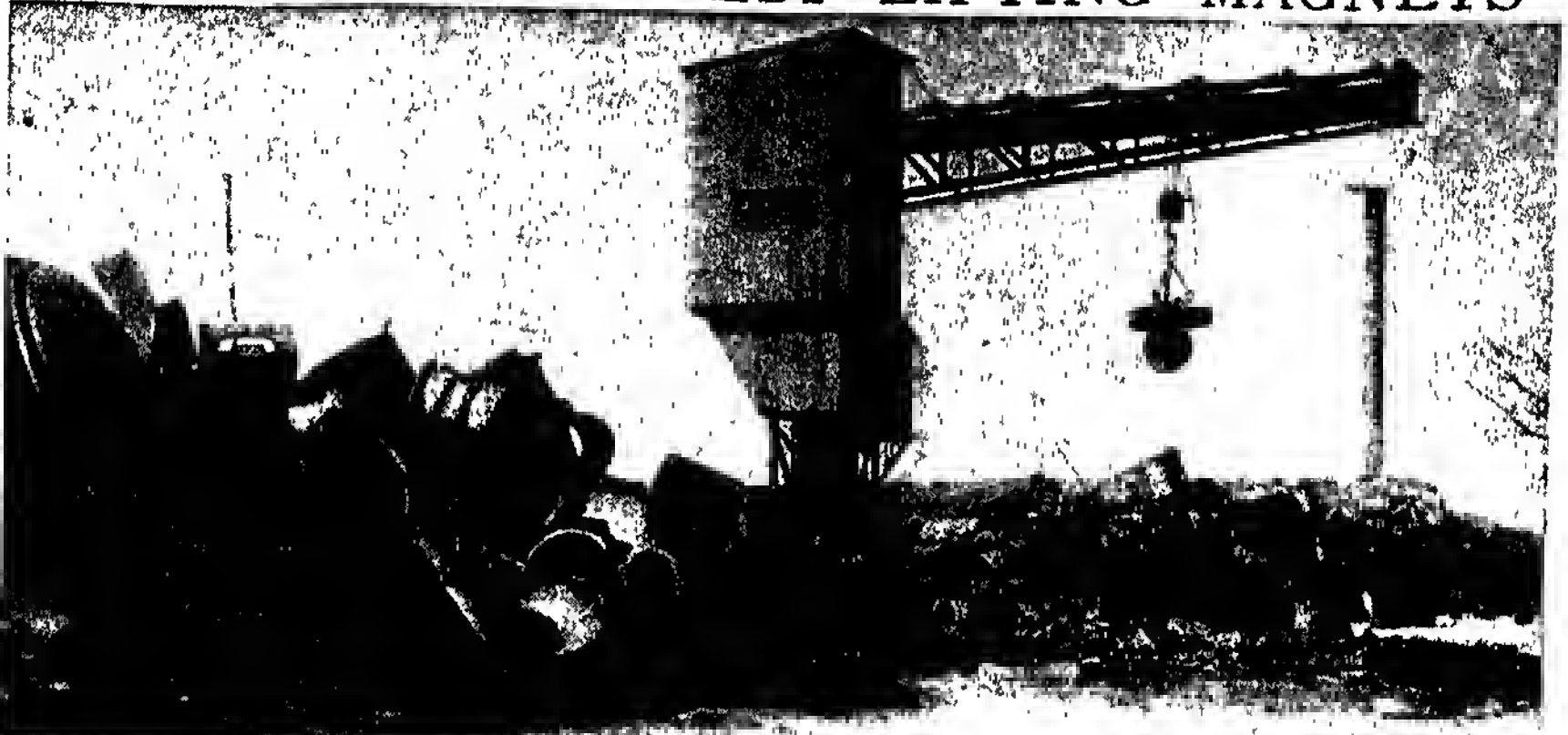


Here are some of the ways in which the electro-magnets, the most powerful of which will lift more than twenty tons, are used. In the left-hand picture a great mass of scrap steel is being raised, in the right-hand picture six barrels of nails are held by the magnet. In the centre the magnet is holding a huge mass of steel weighing over 22 tons, called a "skull-cracker," which is used to smash up old iron, as shown on page 5531.



In this picture some very heavy iron cylinders are being loaded into railway trucks by means of an electro-magnet attached to a crane. As soon as the cylinder is hanging above the truck, the current is shut off, the magnetism ceases, and consequently the iron falls. These magnets are very cheap considering the work they do. They are particularly useful in handling newly-made pig-iron that is red hot.

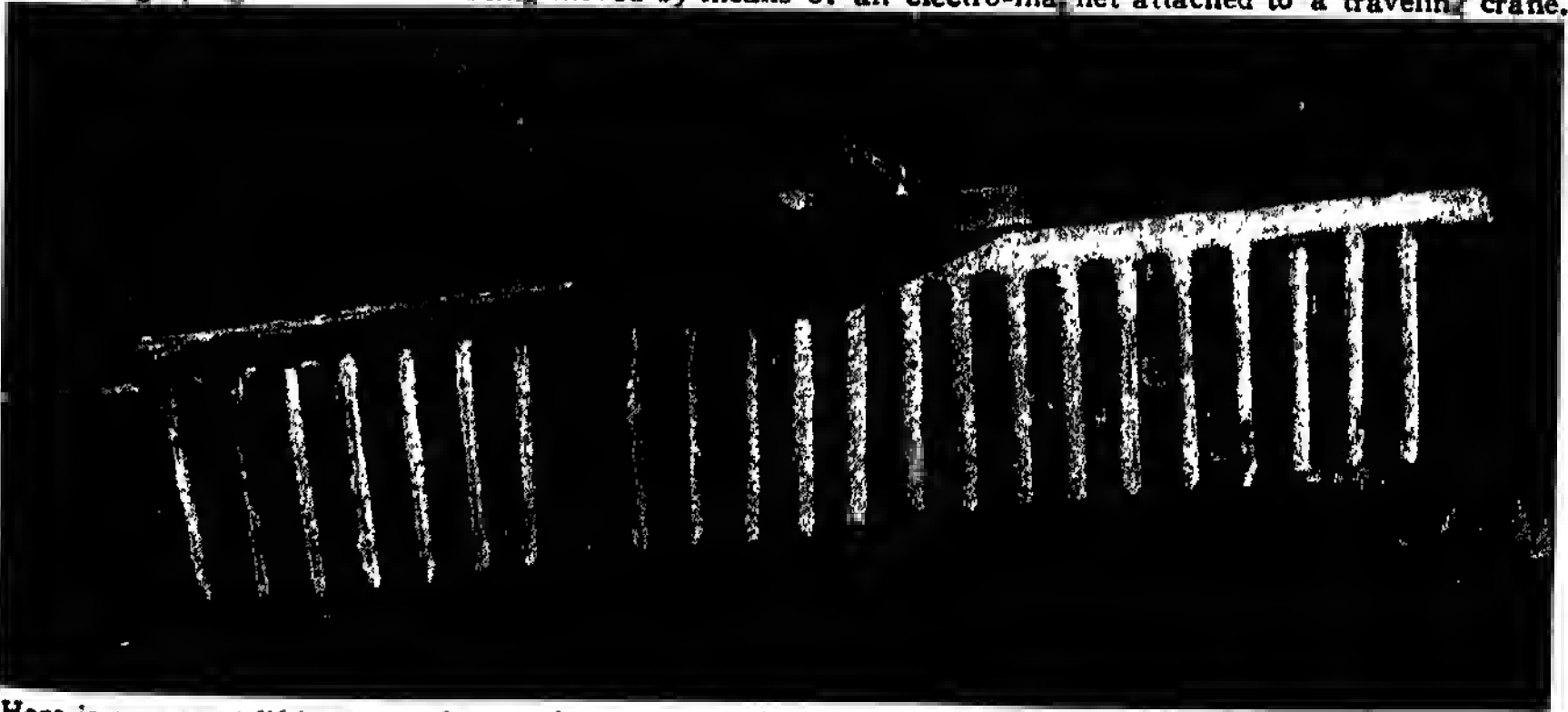
ONE OF THE BIGGEST LIFTING MAGNETS



This picture shows how old machinery is smashed up with the help of one of the biggest lifting magnets in the world. A skull-cracker, weighing 22 tons, is raised and then allowed to fall with a crash on the old iron.



A comparatively small magnet will lift a ton of steel with three men standing upon it, as seen on the left. On the right, in lots of iron are being moved by means of an electro-magnet attached to a traveling crane.



Here is a magnet lifting several tons of pig-iron as though it was a feather. Such a magnet will move a thousand tons of iron in a day. This iron has cooled after being run into channels, as you read in the "Story of Iron and Steel." Magnets are used in shipbuilding for holding steel plates in position till riveted.

THE NEXT STORY OF FAMILIAR THINGS BEGINS ON PAGE 5601.

FABLES OF ÆSOP THE SLAVE IN FRENCH

The English versions of these fables are on page 3370.

LE VILLAGEOIS ET LA VIPÈRE

Par une froide journée d'hiver, un villageois trouva sous une haie une vipère qui était presque morte de froid. L'homme eut pitié de la pauvre bête, l'emporta chez lui et la déposa sur un tapis devant un bon feu. Au bout de quelque temps, la chaleur ranima la vipère qui se mit aussitôt à siffler et à menacer de mordre les enfants.

Le villageois, entendant ses enfants crier, entra en courant, saisit un bâton et tua la vipère en disant: "Est-ce ainsi que tu récompenses ceux qui essayent de te sauver la vie?"

Ceux qui n'ont pas de reconnaissance pour les bienfaits, n'en reçoivent pas d'autres.

LE RENARD ET LA CHÈVRE

Un renard, un jour, tomba dans un puits et ne put en sortir. Quelques heures après, une chèvre passa par là, et, ayant soif, elle demanda au renard si l'eau était bonne.

"Elle est si bonne, si douce," dit le renard, "que j'en ai bu tant que je crains d'être malade."

Là-dessus, la chèvre, sans plus d'hésitation, sauta dans le puits afin de boire. Le renard aussitôt bondit sur son dos, et réussit ainsi à sortir du puits, laissant à la pauvre chèvre le soin de s'échapper comme elle pourrait.

Examinez avec soin les conseils de ceux que vous ne connaissez pas.

L'ENFANT QUI CRIAIT "AU LOUP"

Il y avait une fois un petit berger qui gardait un troupeau de moutons dans les champs. Par plaisanterie, il criait souvent: "Au loup! Au loup!"



A ce cri, les hommes qui travaillaient dans les champs voisins, couraient au secours, mais après avoir été trompés

deux ou trois fois de cette manière, ils résolurent de ne plus faire attention aux cris de l'enfant.

Quelque temps après, un loup vint réellement et le petit berger appela pour de bon. Mais personne ne s'inquiéta de ses cris, et ainsi, ses moutons furent tués par le loup.

Si nous mentons, personne ne nous croira, même quand nous dirons la vérité.

JUPITER ET L'ÂNE

Un âne, appartenant à un jardinier, étant las de porter chaque jour une charge de choux au marché, pria le dieu Jupiter de lui donner un nouveau maître. Jupiter consentit à lui donner un tuilier



qui l'envoya chaque jour au marché avec une charge de tuiles.

Le pauvre baudet, trouvant sa tâche plus pénible que jamais, demanda au dieu de changer encore une fois son maître. Cette fois, Jupiter lui donna un tanneur, qui le traita plus durement et cruellement encore que ses deux autres maîtres.

Quand ce fût trop tard, l'âne souhaita d'être resté avec son premier maître.

Soyez satisfait de votre sort.

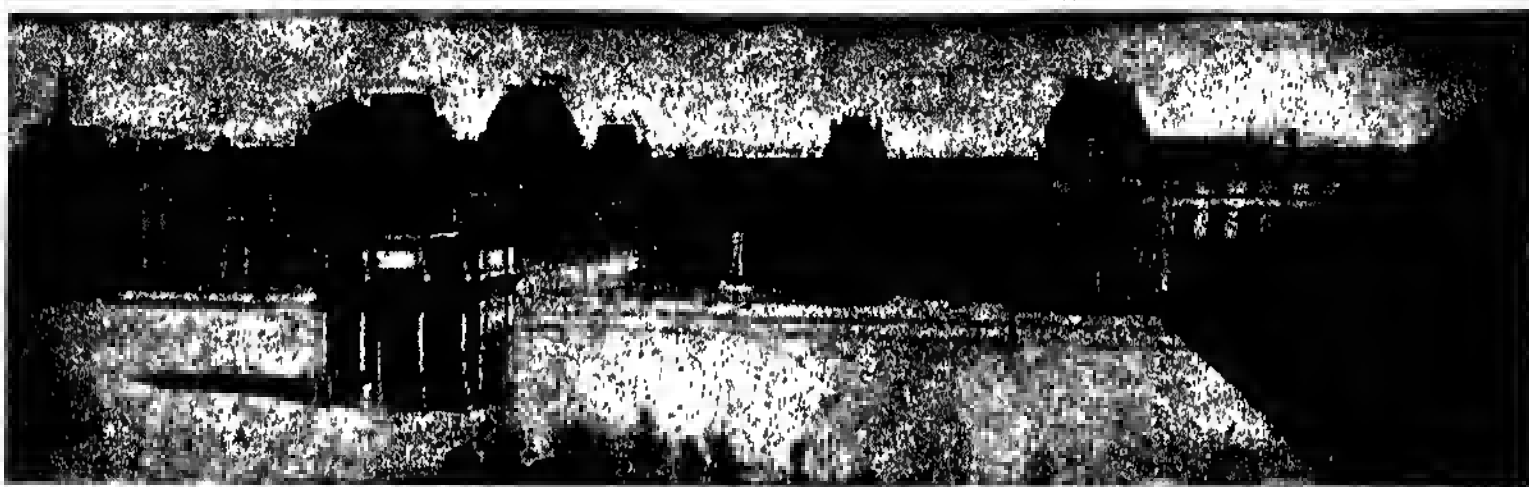
LE RENARD ET LE LION

La première fois qu'un renard vit un lion, et entendit son terrible rugissement, il fut si effrayé qu'il se mit à trembler, étendu à terre, et qu'il mourût presque de terreur.

La fois suivante, il fut moins effrayé du roi des animaux, et osa le regarder timidement. La troisième fois que les deux animaux se rencontrèrent, le renard avait perdu toute crainte, et il s'approcha froidement du lion et se mit à lui causer comme s'il eût été un vieil ami.

La familiarité engendre le mépris.

The Book of ALL COUNTRIES



THE LOUVRE, ONCE A FAMOUS PALACE, NOW THE LARGEST MUSEUM IN THE WORLD

A FIRST HOLIDAY IN PARIS THE BEAUTIFUL SIGHTS OF A BEAUTIFUL CITY

IT is near the end of the school year. We find it hard to keep our attention on our books when every sound from the open air calls us out of doors. But our flagging interest in lessons is roused by the announcement that with a few of our friends, we are to go to Europe with Father and Mother. Our French teacher, who is going home for her vacation, has promised to show us the wonders of the beautiful and interesting city, and we can think and talk of nothing else.

The prospect of really needing their French has spurred the girls on to learn quickly and well, and to follow with delight the lessons of Mademoiselle from the large map of Paris on the class-room wall. They all try to outdo each other in the neatness of their outline maps, traced on tracing-paper, of the Seine and the principal streets, and in making the notes in their books to remind them of the makers of Paris, and the famous people who have lived in it.

At last the longed-for day comes. Our arrival in New York, our stay in one of the large hotels, and our drive down the great Avenue and across the narrower, crowded street to the dock, is in itself a pleasure. Father wants to do some business in London on our way, and so we sail on a steamship that will take us to England. The days on board pass quickly. We are never tired of finding out the wonders of the great ship,

CONTINUED FROM 5465



and watching the constantly changing sea. All too soon we reach Liverpool, and then comes the quick run down to London, and after a few days there, we go to Dover to set out for Paris.

We stay on deck during the short crossing, and watch with interest the beauties of the choppy sea, and the passing shipping, and are astonished to find that in mid-channel we can see the white cliffs of Calais before we have quite lost sight of the cliffs of Dover.

A little over an hour, and the eighteen miles are covered, and we step ashore, "foreigners" for perhaps the first time in our lives, feeling bewildered at demands for our tickets, and rather agitated over getting our hand-baggage through the Customs.

As our train passes along the sands outside the walls of Calais, we get a good view of the old-fashioned town, so long connected with English history and trade. It was here that Queen Philippa begged with tears for the lives of the brave citizens from the angry Edward III., and we remember, too, how deeply unhappy, lonely Queen Mary took the loss of the town to heart.

During the journey of three and a half hours between Calais and Paris, all is interesting and delightful. Boulogne, where Napoleon's boats waited in vain to conquer England, is soon passed, and we enjoy the look of the people and their luggage, the

unfamiliar advertizements, the grey houses and stiff gardens, the rows of poplar-trees bordering the straight roads; even the restaurant car has unfamiliar charms.

Still, we are glad enough to get our first sight of Paris, and to come to a standstill in the Gare du nord, or North Station. An omnibus is waiting for us, but it is half an hour before our baggage is claimed and passed by the Customs, and the porter can carry it off.

Our hotel is not one of the large, expensive ones, where many English and Americans go, but a quiet old French house on the left bank of the Seine, not far from the old heart of the city. No one speaks English, so we shall have to make an effort to throw off our shyness, and say our greetings and express our wants and thanks in French.

How delightful are our simply furnished bedrooms, all opening into each other, with pretty white beds, and tables to write at, and the windows looking across the river to the buildings of the Louvre! Our few possessions are soon arranged, and our first French meal enjoyed, and then we sally forth for a walk—in Paris.

We do not need to go far; the quays close by, and the bridges, are full of busy life. There are the workmen in blue blouses and caps, going home from work; the women with their blue aprons and neatly dressed black hair, without any hats; the children with long plaits, all talking and laughing, and full of animation. How clean is the river, how fresh and keen the air; how fairylike it seems when the lights begin to appear along the quays, outlining the bridges, and on the little steamers and barges! We eagerly look for the towers of Notre Dame, the spire of the lovely Sainte Chapelle in the Law Courts, the Eiffel Tower, with its great light on the top, the highest monument in the world, and then home to bed—for kind, polite Madame makes her house feel like home to us—so as to be ready to start early in the morning.

Mademoiselle tells us, over our de-

licious breakfast of rolls and coffee—some of us prefer chocolate—that we are to begin with a birdseye view of her dear native city, so we joyfully make our way along the quays on the south side of the river till we come to the short bridges that lead on to the Ile de la Cité, the Isle of the City, and soon find ourselves walking round the great cathedral of Paris, dedicated to Notre Dame, our Lady, admiring the three-storied west front with its beautiful rose window, and the wonderful flying supports, or buttresses, round the choir.

But it is one of the towers we wish to ascend—resting on the way, for it is a good climb—to look at the fearsome monsters carved in stone that gaze out over Paris from the gallery round the towers. It is nearly 400 steps to the platform at the top, but once there we stay a long time, and we look and look, and do not want to talk. The river, like a silver thread, we see bordered by quays and crossed by many bridges. We see, too, many wide, straight streets and open spaces, with spires and towers rising from them, and in the distance are swelling hills.

At last, when we have looked long enough, Mademoiselle leads us back to the beginnings of this vast and handsome city, with its three millions of inhabitants. She bids us look down

on the little boat-shaped island—formed of two or three islands, artificially joined as the years went on—on which Notre Dame stands. This is the true heart of the city. As we look, we are led to think of the settlement of fishers and hunters that was found here 2,000 years ago, and was described by Julius Cæsar. He called it Lutetia. The modern name, Paris, comes from the early tribes—the Parisii—who lived in Lutetia and the neighborhood. By degrees came others sweeping over the country. The fierce, lawless Merovingians led their picturesque life here; many Franks of different families raced hither and thither, their long hair streaming in the wind. In front of the cathedral we noticed the great bronze statue of the hero Charlemagne; he stands out in the years about A.D. 800.



SAINTE CHAPELLE

A FIRST HOLIDAY IN PARIS

And then Mademoiselle leads us to think, as we look down on the Seine, with its busy steamers darting to and fro, of the days when the bold Normans swarmed up the river from Rouen, burning what they could not carry away. We then pass on to the foundation of the present cathedral in the middle of the twelfth century, and its completion a hundred years later in the reign of the saintly Louis. He built the Sainte Chapelle in the Palais de Justice, which is also on the Isle of the City, to hold the precious relics he brought home with him from the Crusade. He has been called the Father of Paris; and the small island covered with dingy white houses, lying behind the Isle of the City, is named after him. Louis lived in other palaces besides that on the island; and there was founded in his reign, on the south side of the river, a sort of hostel for students, which grew in the course of centuries to be a great place for education. It is known as the Sorbonne, and the quarter in which it stands is called the Latin Quarter.

Coming down from the tower, we pass inside the cathedral, and sit awhile to admire the light streaming down from the upper windows over the double aisles with their cross views. What stories those pillars could tell if they had a voice! The funeral service of St. Louis was held here, also the coronation of the English king Henry VI., when ten years old, as King of France, for in the fifteenth century the English held Paris for sixteen years. Grievous was the havoc wrought at different times from the so-called "restorations" in the seventeenth and eighteenth centuries; and at the awful time of the Revolution the greater part of the old statues and choir chapels were destroyed.

The splendid coronation of Napoleon I. and Josephine took place here, also the grand marriage of Napoleon III. In the frantic times of the Commune, in 1871, Notre Dame had a narrow escape. Chairs were piled up and set alight, and the building was only saved from destruction by the want of air and the dampness of the walls.

In the afternoon we take the steamer to the Jardin des Plantes, where there

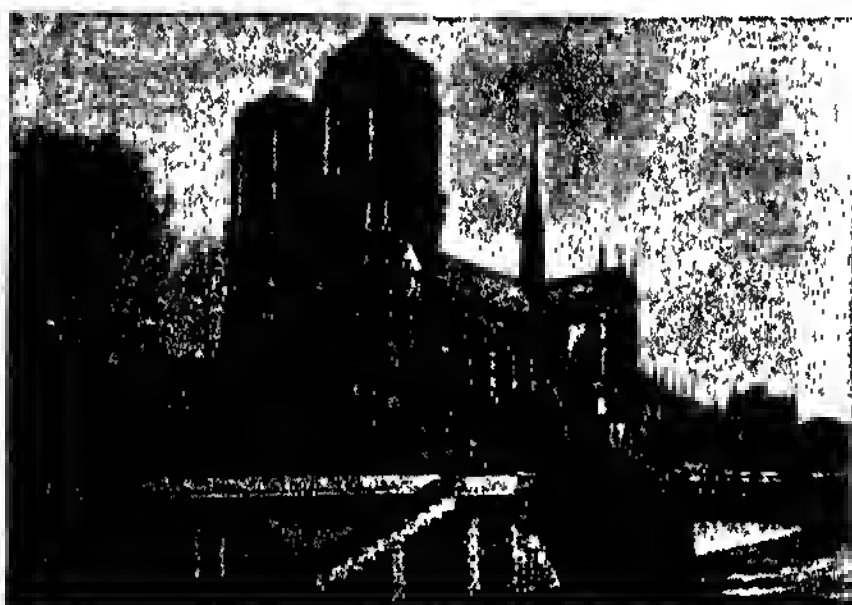
are animals, too. We spend a happy time watching the children and seeing their delight at the peacocks spreading their grand tails and shining blue among the bushes.

The next morning, early, we make our way to the Louvre, across the Pont des Arts—the Bridge of the Arts.

We know the shape of the vast pile of buildings from our map, and from our view of it from the tower of Notre Dame; and before going inside we spend some time walking about the courts—the inner court, where we can see the corner in which the old castle of the Louvre once stood, and the larger court, where stands the statue of Lafayette—given by the children of America—and the monument

of Gambetta, the French statesman. As we pass round, we think of the builders of the huge palace, as it grew through the centuries. Such were Francis I., he who had such gay times with King Henry VIII. at the Field of the Cloth of Gold; Catherine of Medicis, the mother of three

kings of France, the eldest of whom married the famous Mary Queen of Scots; Henry of Navarre, the hero we know so well in Macaulay's poem, "The Battle of Ivry." Louis XIII. and Louis XIV. did their share, and so did, long after, Napoleon I. and III. The Louvre is now the largest museum and picture-gallery in the world. We may think of it as a



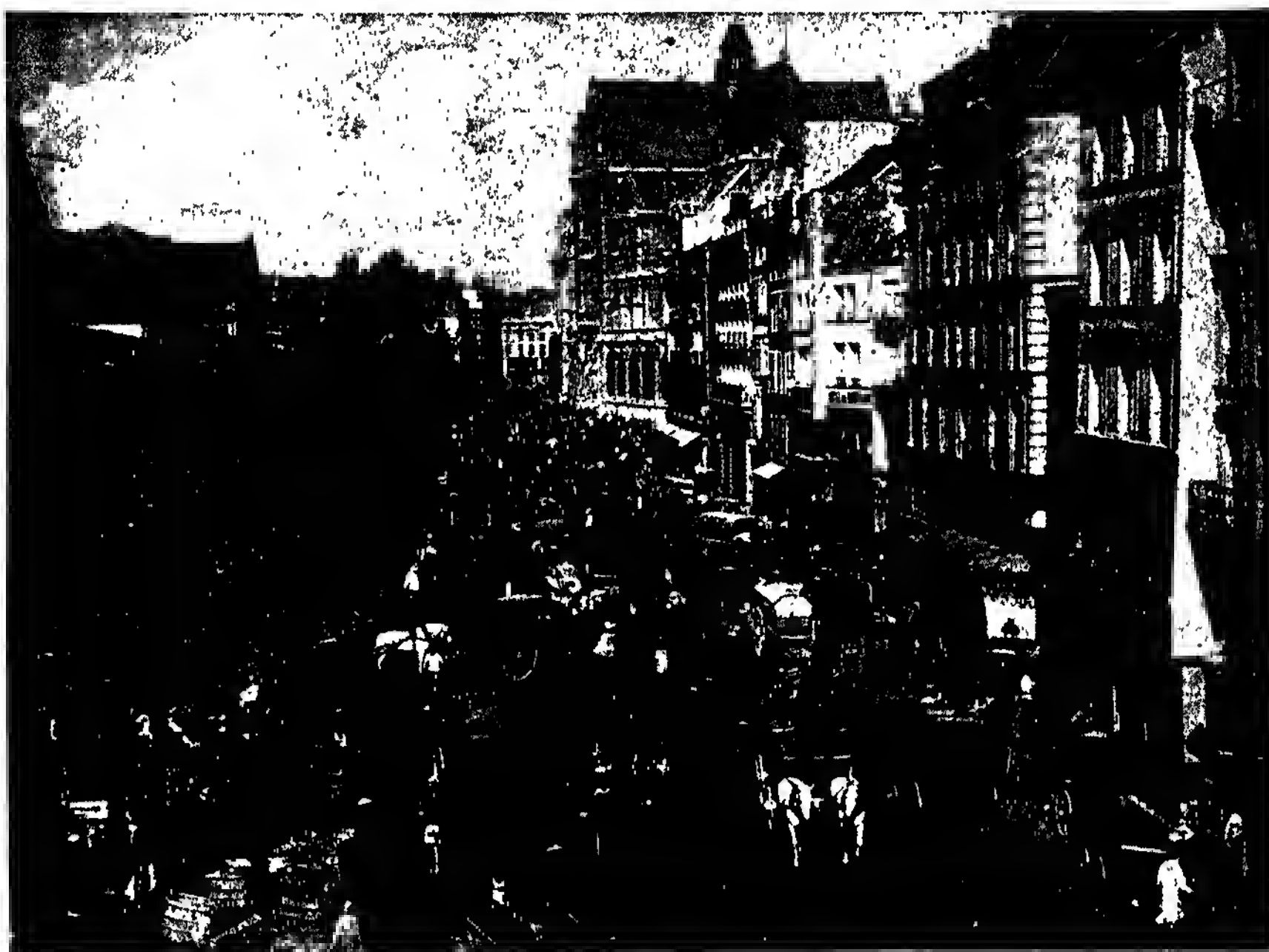
THE CATHEDRAL OF NOTRE DAME



THE FAMOUS STONE FIGURES ON NOTRE DAME

picture-gallery, a museum of decorative art, and a historical museum all in one building. It would take us hours merely to walk straight through, so all we can possibly hope to do during our short visit to Paris is to look in for an hour whenever we can, and study just a few of the wonders displayed in the magnificent galleries and rooms. To begin with, we are all impatient to see the models of the Assyrian mounds, and to compare the treasures from them and from Egypt with those we know so well in the Metropolitan. The time goes all too quickly while we are absorbed in the beauty and

the splendid avenue of the Champs Elysées beyond. We loiter long in the gardens of the Tuileries, while Mademoiselle tells us of the handsome Tuileries palace which grew up as a sort of sister palace to the Louvre, to which it was joined by the wings. The wings we see still standing after restorations, but the splendid main part, the body, so to speak, is all gone, burned down at the time of the Franco-Prussian War in 1870 by the men of Paris, who were maddened by the awful losses of the war. In the evening we gather in Mademoiselle's room, with our maps and plans, and talk over the



A BUSY STREET SCENE IN PARIS NEAR THE CENTRAL MARKET

completeness of these collections, but lunch and a rest in a restaurant close by become a necessity.

After that, we are ready to return to the Place du Carrousel, the wide, open space beyond Gambetta's statue, and to examine the triumphal arch in memory of Napoleon's victories in Central Europe. The chariot group on the top replaces the famous group from Venice which Napoleon carried off, and which was restored to its owners later on. We enjoy the fine view looking west from this arch, over the gardens of the Tuileries and the wide, open Place de la Concorde, with

tragic times of the vanished Tuileries. In fancy we hear the yells of the mob as they dance and shout round the carriages of the king and queen, Louis XVI. and Marie Antoinette, as they escort them from their palace at Versailles to the Tuileries. "We shall have bread enough now we have the baker and the baker's wife and boy," cry the crowd.

Next morning we start early so that we can spend a long day at Versailles, about twelve miles out of Paris. We take the electric cars, so as to see all we can of Paris and Sèvres and the fortifications, and are much amused to see the men

A FIRST HOLIDAY IN PARIS

poking their long rods into the carts to find out if anything that ought to pay duty is being smuggled. We learn to our amazement that all merchandise brought into Paris from the surrounding country must pay a tax or duty, called the octroi, at the city gates. Arrived at Versailles, we first look at the wonder of the gardens. It seems almost impossible that the great expanse of woods and flower gardens, with lawns and ponds, a canal a mile long, and fountains that are the wonder of the world, was once a mere sandy waste.

But so it was when Louis XIV. turned his mind to making the desert into a

window like the eye of an ox, where Louis XV. kept his courtiers waiting about to see him put on his fine clothes. The rooms of Louis XVI. and his queen have a sad interest; indeed, all is sad at Versailles, the scene of the luxury and thoughtless, selfish extravagance when France was starving, that did so much toward bringing on the Revolution.

The pictures on the walls give us many vivid impressions of the history of France—portraits, pictures of great events, such as the Coronation of Napoleon and Josephine, with the Pope looking on; indeed, there are endless pictures of



THE WONDERFUL GALLERY OF MIRRORS IN THE GREAT PALACE OF VERSAILLES

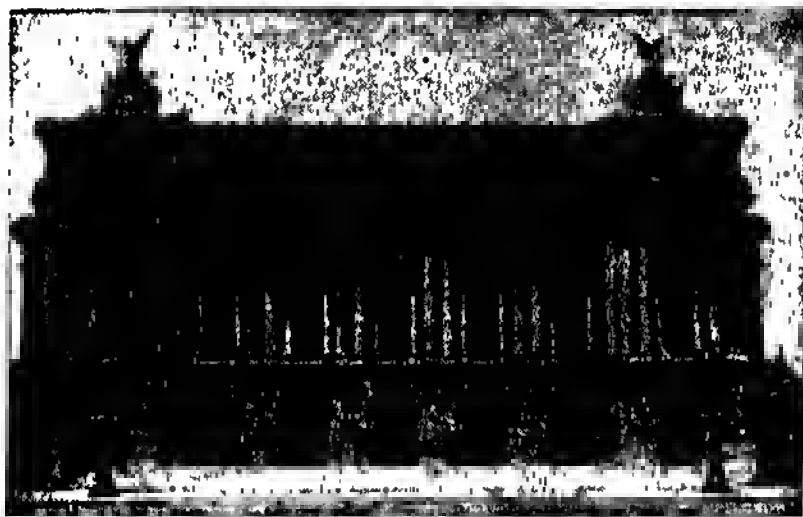
blooming garden and the little hunting castle of Louis XIII. into a magnificent palace large enough for all the Court to live in. We wander about the paths and terraces, thinking of the labor it cost to bring the water from a distance, and to lay out these huge pleasure-grounds, and plant all the avenues and shrubberies, and adorn them with such an enormous number of sculptures. As we pass through room after room in the vast palace, we are not surprised to hear that it was built to hold 10,000 people. We see the rooms of Louis XIV., and the Salle de l'Œil de Bœuf, the room with a round

Napoleon in all the varied successes of his life. The acres of battle pictures are too dreadful to look at very long. Among them we find a picture of the surrender of Cornwallis, at Yorktown, which the artist has depicted as having been made to the French General Rochambeau.

We spend some time in the long Gallery of Mirrors, realizing the extraordinary fact that the German army encamped for some months at Versailles, and that the King of Prussia was proclaimed German Emperor in this very room in 1871.

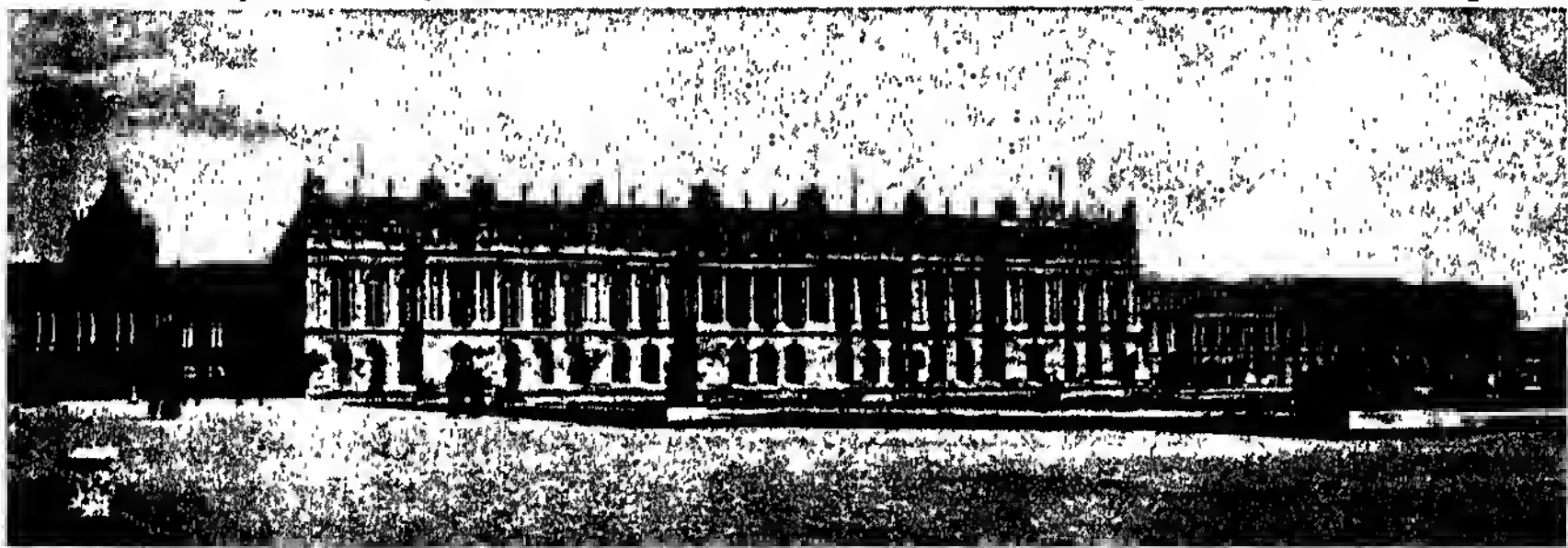
Next day is Sunday. After service at

the American church we stroll along the quays by the Louvre, and so to the Place de la Concorde, perhaps the largest and most beautiful square to be found in the world. We look at the great stone figures which represent the chief towns of France. Then we come to the marble fountains, and between them the Egyptian obelisk from Luxor, like Cleopatra's Needle in Central Park, New York. It was almost on this spot that the guillotine was set up during the Revolution; and more than 3,000 persons were put to death here in the space of a year and a half.



THE OPERA HOUSE

we start in a taxi-cab, along the wonderful Champs Elysées, admiring the fine avenues, and seeing the children in the gardens bowling hoops, playing at battle-dore and shuttlecock, and thoroughly enjoying themselves under the care of their nurses in big cloaks and white frilled caps ornamented with handsome, wide plaid ribbons which hang almost down to the ground. Too soon we arrive at the Arc de Triomphe de l'Etoile, the largest triumphal arch in the world, which we have already seen from a distance on many occasions. The great sculptures upon it



THE OUTSIDE OF THE MAGNIFICENT PALACE OF VERSAILLES, AS SEEN FROM THE GARDENS

In the afternoon we take a long walk through the streets, and feel intensely interested in the crowds, and we look at the Palais Royal, behind the Louvre, once so gay and bright, now so dingy, and we think of the young leader of the Revolution who, standing on a table in the courtyard, poured out fiery words to his excited audience, until they snatched green leaves from the trees—green, the color of hope—as their badge, and resistlessly forced their way to the destruction of the hated Bastille. Next day, as most of the museums are shut, to have their floors waxed, Mademoiselle has arranged a most delightful out-of-doors day. Off



THE CLUNY MUSEUM

chiefly record the successes of Napoleon and his generals. We mount by the elevator to the platform, whence we can see all round this handsome part of Paris. Many wide roads lead out like rays from the arch. Descending again, we take the one that leads direct to the Bois de Boulogne. This park is a fragment of the forest that once filled the loop made by the Seine in which it stands. We find much to interest us—the upper lake and the cascade, the lower lake and the woods and walks, and the numbers of carriages. Mademoiselle tells us these have to go at a walking pace on the days of the great races at the Long-champs course, close by, when all Paris

turns out in the gayest and most wonderful clothes. We seek a sheltered corner for our picnic lunch, and then find that Mademoiselle has a pleasant surprise for us. A friend of hers has invited us to tea with her children in the Jardin d'Acclimatation. Mademoiselle has already told us about this delightful garden, which is half zoological garden and half botanical garden. Now, we have just been longing to speak to some French children—they look so charming—and here is our chance. They are younger than we are, but we are glad, for it is we who are shy, not they, as they come forward to speak the little English that they know and help us with our French. We soon make friends, and the two little girls join them in riding on the elephants and camels, and driving in carts drawn by ostriches. And then they take us to the little ponies, standing in their nice stable, and they smile as we try to pronounce their names, and we watch the children as they go off to their riding lessons. We find the rabbit-house delightful also, and the absurd little dogs—all these are for sale. Presently we have coffee and cakes, and then a run through the gardens, finding most of the old zoo favorites under their French names. The nothouses recall the Bronx. Next morning we leave a large bunch of roses for the children's mother, with a message of thanks, and then we make our way to the Greek sculpture at the Louvre. We look only at a few of the marvels, for Mademoiselle likes us to look earnestly at one for a time, and then shut our eyes and recall it in our mind, and then look again, thus learning it by heart. This we do with the beautiful Venus. We feel

her quietly drawing us on all the way along the corridor at the end of which she stands alone. Some of us have seen casts of her before, but, oh, the difference as we look on the marble itself! We feel it delightful to see such perfect, peaceful beauty.

Those of us who have seen the Parthenon Gallery in the British Museum in London are interested in the fragments of the frieze, showing the gentle Athenian maidens, in the Louvre, and we each find something that we particularly like to print on our memories—the Winged Victory of Samothrace; the Boy with a Goose, Alexander the Great, Discobolus

Resting, Old Father Tiber, and other treasures. The afternoon turns wet, and, to our joy, Mademoiselle's friend asks us to come to see her children again. So we have the pleasure of seeing a French family at home, and greatly admire the shiny neatness and all the pretty arrangements. We teach our little friends how to play some of our games, and then they show us some of their French games. We are delighted with their picture books and song books, and the dolls and toys that they show us so prettily.

tel des Invalides

Next day is still wet, so we cross to the Louvre and spend a couple of hours studying some of the wonderful pictures. Mademoiselle takes us first to Mona Lisa, La Joconde. How she smiles ; how her eyes follow us ; how alive she is ; and how strange the story of the mysterious theft and fortunate recovery of this picture. Leonardo da Vinci worked four years at this picture, and then it was not finished. We stay as long as we like before the great pictures that attract us, but Mademoiselle thinks six, or eight at most, are as many as we can really remember at all well.



NAPOLEON'S TOMB IN THE HEART OF PARIS

In the afternoon we walk or take omnibuses along the boulevards, the wide, tree-bordered roads built on the lines of the old fortifications, and are greatly amused with the life and bustle, especially with the boys shouting out the names of their papers, the chair-mender blowing a horn, the dog's barber with his box of scissors. We buy a few presents to take home, and also look in at the great Magasins du Louvre, where everything we can think of can be bought if we only know the right way to set about it. Our treat next day is the Cluny Museum, built over the site of an old Roman

palace, of which the only part left is some remains of its sumptuous baths. The present Hotel Cluny—it was the custom to call grandhouseshotels in former days—was built over 400 years ago, and for long it was the home of royal and noble folk. Among them were James V. of Scotland, and Mary, the sister of King Henry VIII. and wife of Louis XII. Now, a great collection of thousands of interesting and beautiful things are safely stored in it, chiefly furniture and all kinds of rare works of art. It is a fine place in which to dream of bygone days, for here is the actual setting in which to put our mind-pictures of the great lords and ladies whose portraits we have seen so often in Paris. We can fancy them gliding out of the door into the garden, sitting in the stiff chairs by the splendid carved mantelpiece, playing delicately on the musical instruments, receiving as presents—perhaps rather bored—the beautiful works in silver and gold and glass, handling those magnificent keys; and there are the clocks that ticked away their time so surely and so steadily!

The rest of the day we spend on

steamers up and down the Seine, gathering some ideas of the great water trade of the city, and watching at the quays the unloading of the wine, the grain, and other things needed by the inhabitants.

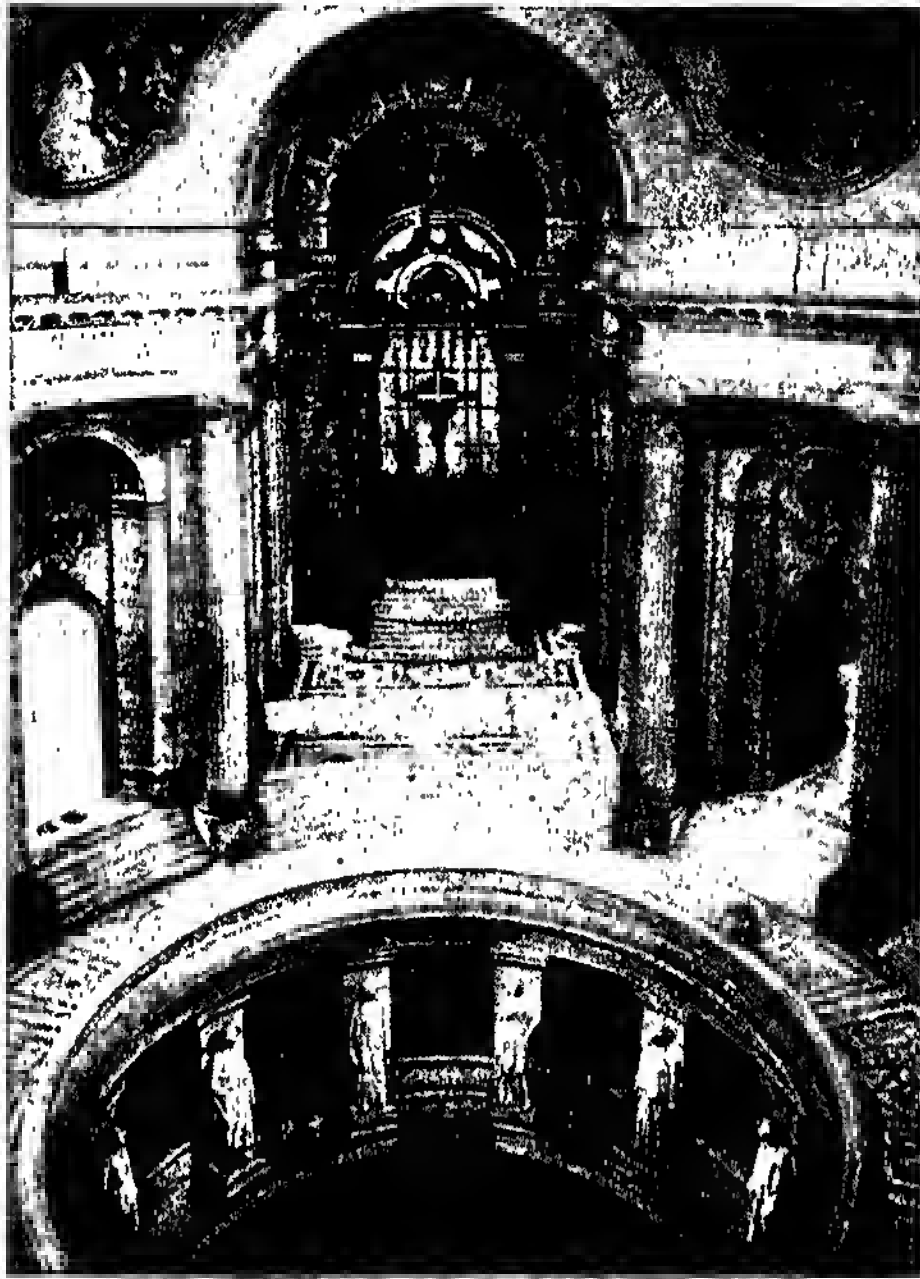
We have many times noticed the dome of the Invalides, and when we come next day to spend our morning there we find that the dome itself is but a part of an enormous pile raised by Louis XIV. as a refuge for his old soldiers, the invalids. It was planned to house 7,000, but, alas! it is too small to hold all who need its shelter now. In some of the buildings are displayed all sorts of arms and armor

and relics of the terrible wars that have drained France of her strong fathers and sons.

The Napoleon relics make the Man of Destiny very real to us. His grey coat, his well-known hats, his maps and telescopes, the toys of his adored little son, the pathetic relics of his lonely exile and death at St. Helena are all here. His remains were brought to the Invalides nineteen years after his death, to rest, as his will directs, by the Seine among the French people whom he loved so well. We pass to his tomb,

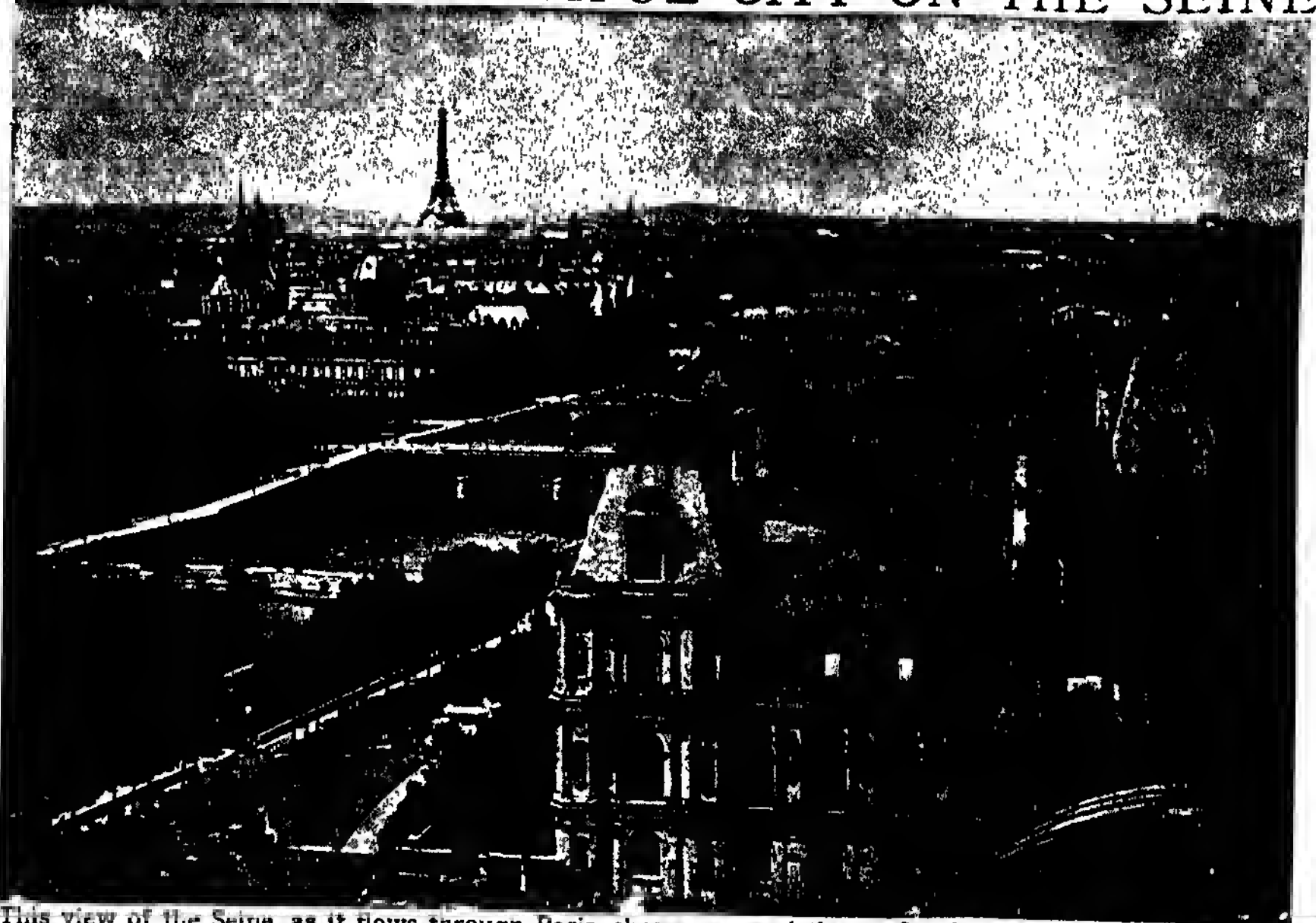
immediately under the dome. Round the crypt are twelve imposing figures, and sixty flags captured in battle.

And now Mademoiselle says that we have had enough sight-seeing, though there are hundreds more sights to see, and during the few days that remain we spend our time on the steamers, on the tops of omnibuses, in the various gardens. We choose the finest of the days to say good-bye to Paris from the top of the Eiffel Tower. We have felt ever since we came to Paris that the tower was stiff and ugly, and dwarfed the other heights

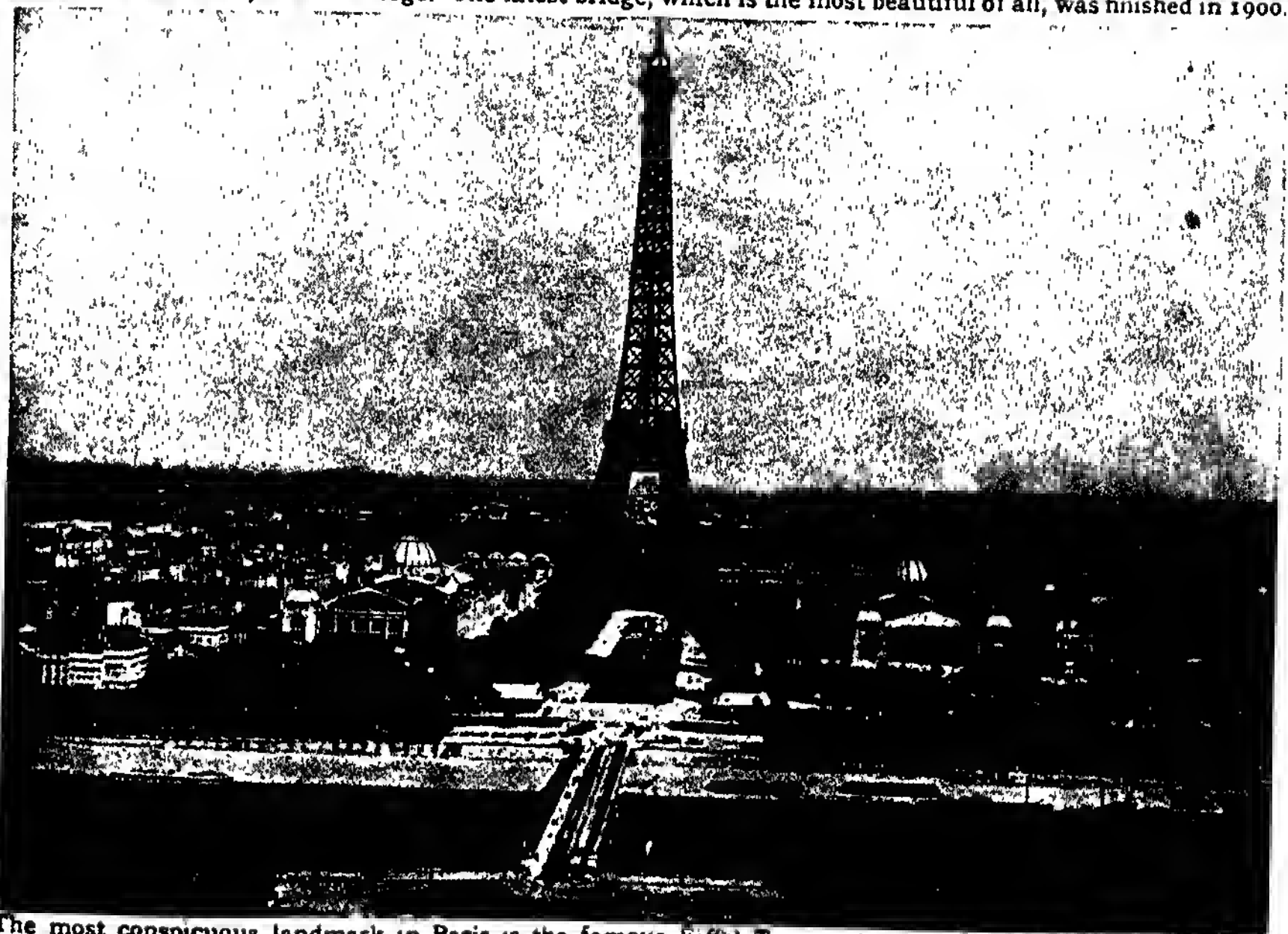


THE INTERIOR OF NAPOLEON'S TOMB
Napoleon lies in the sarcophagus below

PARIS, THE BEAUTIFUL CITY ON THE SEINE



This view of the Seine, as it flows through Paris, shows many of the 32 fine bridges that form one of the glories of the French capital. The oldest of these bridges, which was begun in 1578, curiously enough is called the Pont Neuf, or New Bridge. The latest bridge, which is the most beautiful of all, was finished in 1900.



The most conspicuous landmark in Paris is the famous Eiffel Tower, that stands in the Champ-de-Mars. The tower, which dominates the city, is built of iron, and is 985 feet high. It cost \$1,000,000 to build. The first telephone message from America to Europe was despatched to the wireless station on the Eiffel Tower. The photographs on these pages are by Messrs. Frith Lévy Génoux Neurdin and others.



LITTLE FRENCH CHILDREN ENJOYING THEMSELVES IN THE PARIS ZOO

of the city; but now, standing on the third platform, over 900 feet from the ground—which we have reached by elevators—near the giant's head, we feel how wonderful it is to look over all the towers and spires. Nay, we can see far away over most of the hills that surround the great city, and far away to the great wide France beyond. "Plenty to see next time," laughs Mademoiselle, as we

rather gravely roll up our maps, reflecting that we have not seen St. Denis, nor the Pantheon, nor the Madeleine, nor the Luxembourg, nor the Trocadéro, nor much more that lies in the wide space below us.

And so to earth again and to pack, and then set out on our way to Rome, saying very gratefully as we part, "Merci, merci beaucoup, chère Mademoiselle."

THE NEXT STORY OF COUNTRIES IS ON PAGE 5551.



THE HALL OF THE EMPERORS IN THE LOUVRE MUSEUM



Picture from Underwood. The Submarine Net in Halifax Harbor.

THE MARITIME PROVINCES

THE Maritime Provinces is the name given in common to the group of three provinces, Nova Scotia, New Brunswick and Prince Edward Island, on the eastern coast of Canada. They are of the utmost importance to the nation. Their people, who are largely of British descent, are a sturdy folk, brave and loyal, and well worthy of their post of honor at the eastern gateway of the Dominion. The history of the three provinces is closely interwoven, for this whole region was the Acadia of the French, who were its first settlers.

The struggle for the continent may be said to have begun in Nova Scotia. As early as 1613, an effort was made by the English colonists of Virginia to destroy the French settlement at Port Royal, now called Annapolis, on the fertile landward side of the peninsula, which is almost separated from New Brunswick by the Bay of Fundy.

The British claimed that the peninsula lay within the territory which belonged to them, and in 1621 James I granted it to a Scotchman named Sir William Alexander. Efforts were made from time to time to make good these

CONTINUED FROM 5407



claims, but it was not until the Peace of Utrecht in 1713 that it was given up by the French. At that time there were four thousand Acadians in the country. Their descendants now number a hundred and fifty thousand, who are found chiefly in certain counties where they form real French communities, which differ in manners, customs and language from the English-speaking people by whom they are surrounded.

The name Nova Scotia was given to the peninsula in the charter from James I to Sir William Alexander. The province, however, consists of the peninsula and the island of Cape Breton. Nova Scotia varies in width from sixty to a hundred miles, while its length is two hundred and sixty-eight miles. The bold, rugged rocks of the eastern coast are everywhere eaten, by the waves of the Atlantic, into countless inlets, bays and harbors. Of these the chief is Halifax Harbor, which is easy of access, and is more than large and deep enough to hold all the navies of the world within its sheltering cliffs.

The western coast is broken by St. Mary's Bay, which is open to the south, Annapolis Bay, and the great Basin of Minas, which ends in Cobequid Bay.

Trees come down to the water's edge of part of this western coast, but for a great part of its length it is bounded by low precipices, which keep out the furious tides of the Bay of Fundy. No part of the peninsula is more than thirty miles from the sea. There are many beautiful lakes, and rivers run east and west to the sea.

The island of Cape Breton is divided from Nova Scotia by the narrow Strait of Canso, across which ferry boats ply and carry passengers and trains. The island is a hundred and eight miles long, and the width is very irregular. In the centre is the Bras d'Or, a beautiful land-locked arm of the sea. A canal joins the Bras d'Or to the Little Bras d'Or, and separates the island into two parts.

The mineral wealth of the province of Nova Scotia is great. Manganese, copper, gold, gypsum, iron and coal are all found; the last three in great quantities. The deposits of gypsum are especially large, and in places the white cliffs, gleaming through the foliage of overhanging trees, add much to the picturesqueness of the scene. Coal and iron, however, form the chief sources of mineral wealth in the province. The coal fields at Sydney, Cape Breton, cover an area of five hundred and fifty square miles, and in the whole province the coal deposits are estimated at many billions of tons. In some places the coal is so near the surface, that the sailors who visited Cape Breton in the early days, dug it out with crowbars, and carried it away for their cooking stoves. In other places, the deposits are so deep that one of the mines is said to be the deepest in the world. The iron mines are extensively worked, and huge steel mills at Sydney and New Glasgow give employment to large numbers of people. There is a great deal of limestone in the province, and much feldspar is sent to the New Jersey and Ohio potteries.

THE FERTILE FARM LANDS OF NOVA SCOTIA

The best farm lands of Nova Scotia are found in the inland valleys, and along the sheltered western shores. The valleys are very fertile and the western counties are famous for their fruit. In the spring-time, the traveler in the Annapolis Valley can drive through miles of apple trees in bloom, and the delicate odor from the blossoms, carried on every little breeze

that plays among them, is a joy to remember for years. The diked marshes around the head of the Bay of Fundy bring one back in thought to Holland. In these marshy lands, cattle thrive, and dairy farming is an established industry. The upland regions produce large quantities of hay, potatoes, and other roots, and oats, while wheat flourishes in sheltered places in the valleys. Until recently farming was neglected in Nova Scotia, but a few years ago the government established an Agricultural College at Truro, to which the sons of farmers go to learn the best methods of farming. Dairy farming and co-operative creameries have been established, and some Nova Scotians hope that their province may become the Denmark of the New World.

OTHER INDUSTRIES OF THE PROVINCE

As we have seen, the making of steel is an important industry. For the making of steel, coke is required, and in the production of coke a new industry, tar-making, has sprung up. Millions of gallons of tar are every year extracted from the coal of which the coke is made.

The fisheries of Nova Scotia are among the finest and most profitable in the world, and rank second in the Dominion. Along the Atlantic coast, the waters teem with cod, mackerel, herring, haddock, halibut; in fact, all the fishes of the North Atlantic are found here in abundance. There are cotton mills in the province, and sugar is made at Halifax. The forests are still valuable, and cover a large part of the area of the province.

THE CITIES AND TOWNS OF NOVA SCOTIA

The chief city of the province is Halifax, which was founded in 1749. It is built on a peninsula which juts out into the harbor, and is surrounded by water on all sides, except where a rocky isthmus joins the peninsula to the mainland. Probably no city along the Atlantic coast is better fortified than Halifax. The rocky shores of the harbor make it a natural fortress. The citadel rises above the city, and forts on islands which command the entrance to the harbor, are so built that the fire from their guns interlaces. A magnificent new quay capable of holding the largest ocean liner has lately been built, and railway tracks run down to this quay, so that passengers may leave at once without trouble.

WHAT NOVA SCOTIA CAN SHOW



The village of Annapolis Royal was once considered a strong fortress though now a modern warship would knock it to pieces in ten minutes. Here is the old powder magazine and some of the old cannon which were so dangerous long ago. Annapolis is the oldest European settlement north of Florida.



Halifax, Nova Scotia, is one of the old towns of America, and descendants of some of the original settlers still live there. Some of the residential streets, like Spring Garden Road, here shown are beautiful. The city is built on a rocky peninsula in the harbor, and its position is one of great strength.

The city has a fine public school system, a university, electric cars, dry docks, and cable communication with Europe. This flourishing city met with a great disaster in the year 1917. On the morning of the 6th of December, a steamer, laden with ammunition, on its way out of Bedford Basin, an inner arm of the harbor, collided with another vessel. The ammunition boat blew up, and the force of the explosion wrecked a large section of the city. Over a thousand people were killed; thousands were left homeless, and numbers lost all that they had.

Sydney, on Cape Breton Island, is the centre of the coal mining industry, and it is here that much of the manufacturing is done. Yarmouth, at the southern end, is a shipping point. Truro is a railway centre, and it is here that the normal school and the Agricultural College are situated. New Glasgow is a mining town, where there are iron and steel works, glass works, and shipbuilding yards. Amherst is also a thriving mining town which has a number of factories.

As we may read in other places in the book, Cape Breton Island was left in possession of the French after Nova Scotia was ceded to the British. Louisburg, on the northern coast, a few miles from the point called Cape Breton, was at this time an important place, and was strongly fortified. It had once been captured by the New England colonists under Sir William Pepperell. The French determined that it should never be taken from them again and in an effort to make it impregnable spent on the fortifications a sum of ten million dollars, so large an amount of money for those days that it is said the king demanded if the walls were built of gold. Nevertheless it was taken a second time by the British, and so that it might never rise again the walls of the fortifications and the houses in the town were razed to the ground. In the years that have gone by since then, the stones have been carried away and some grassy mounds and a few ruined arches are all that remain to prove the existence of the once great fortress. A small town, to which the name of Louisburg has been given, stands on another part of the harbor, and as the harbor is used as a shipping place by some of the coal companies the town may rise into importance, but it is unlikely that it will ever catch up with other cities.

PRINCE EDWARD ISLAND—"THE GARDEN OF THE GULF"

Probably at some time a tunnel will be built under Northumberland Strait, which divides the Island Province of the Dominion from New Brunswick and Nova Scotia. Huge ferry boats now carry passengers and freight trains across the narrowest part of the strait, and boats run from Nova Scotian ports; but a tunnel would make communication at all times much more certain.

Unlike her sister islands, Prince Edward Island has few minerals. The province possesses the best fishing grounds in the St. Lawrence; but although the fisheries are valuable, the people turn more to agriculture. The dense forests that once covered the country have been cut down, and eighty-five per cent. of the area is in farm lands, and the fertility of the soil has given the island its name of the "Garden of the Gulf." The remaining fifteen per cent. consists of swamps, which may be drained, and peat bogs from which at some future time valuable fuel may be obtained. The principal crops are oats and potatoes and other roots. Wheat and barley are grown and a considerable number of farmers are engaged in dairy farming. It is hoped that the fox farming industry, of which the story is told in another place, will add much to the prosperity of the province.

Prince Edward Island is the smallest of the provinces. Its length is only one hundred and forty-five miles, and its area is actually less than that of Cape Breton Island. The province is more thickly populated than any of the others in the Dominion. There are few rich people on the island; but on the other hand there are very few poor people. Charlottetown, the capital city, which is situated on the south side of the island, has a population of 12,000. It was here that the conference which had met to decide whether the three maritime provinces should unite were sitting when delegates from the other provinces arrived to invite them to a conference at Quebec.

NEW BRUNSWICK, THE PROVINCE OF THE LOYALISTS

When Nova Scotia was ceded to the British, the country now called New Brunswick formed part of it, and continued to form part of it until 1784. In that year, the Loyalists who had gone

TWO CHARMING CANADIAN VILLAGES



This is the charming little village of Whycocomagh on Cape Breton Island, or rather we should say in the island, for it is in the interior, on an arm of the Bras d'Or Lake. No more beautiful place for a summer vacation can be found. Sea bathing can be had, for the lake is really a landlocked inlet.



So much of Canada is busy and new that it is delightful sometimes to find a quaint old village like Kingsport on the Basin of Minas. Here everything moves slowly and quietly along, and the atmosphere is restful when one is tired. The Basin is an inlet of the Bay of Fundy, and the tides are high.

up to carve new homes out of its forest-covered lands, demanded a separate government and got it, and the province had its own government until it joined in the confederation of the Dominion.

Except for the narrow isthmus which joins it to Nova Scotia, New Brunswick is bounded on two sides by water, on the south by the Bay of Fundy and on the east by the Gulf of St. Lawrence. Chaleur Bay and the province of Quebec bound it on the north, and Quebec and the state of Maine on the east. Its greatest length from east to west is two hundred miles, and from north to south two hundred and thirty miles, so you see the province is almost square in shape.

Low mountains which run along the southern border protect the coast from the violence of the tides in the Bay of Fundy. They are broken by the gap through which the St. John River flows, and here there is a great harbor which is free from ice throughout the winter months.

In this harbor may be seen the curious sight of ships lying high and dry on the mud at low tide, and gradually rising with the incoming flow, until at high tide they float at anchor in deep water. The scenery of New Brunswick is picturesque in the extreme. It has many rivers and lakes, the northwestern part is mountainous, and the whole province is covered with beautiful forests.

For many years the sea and the forest provided the province with its chief sources of wealth. The fisheries rank next to those of Nova Scotia, and the forests seemed inexhaustible. Much of the pine has been cut down, but the vast forests of spruce, hemlocks, fir, cedar and hardwoods still remain. As you know, spruce is largely used in paper-making, and pulp-making has become an important industry. Spruce forests are replanted like any other crop, the only difference being that it is about thirty years before the new crop of trees are ready for cutting. Therefore, there is little danger that the spruce forests will be destroyed.

At one time New Brunswick produced a great deal of coal called albertite, but the deposit was worked out, and since then little has been done in coal mining, for although the area of coal land is large, the deposits are thin. The province has, however, great mineral resources. Iron,

copper, manganese, antimony, and plumbago are found. Gold and silver are also found. As in Nova Scotia and Cape Breton, gypsum occurs in unlimited quantities. Little has been done to develop a mining industry. Valuable quarries of granite, grindstone, and limestone provide employment for a large number of people.

It is only of late years that much attention has been paid to agriculture. The population is small in comparison to the size of the province and it was easy to supply the needs of the inhabitants. Nevertheless, New Brunswick may develop into a rich farming country. Everything that will grow in a temperate climate can be cultivated, and there are millions of acres of well drained land waiting for cultivation along the valleys of the rivers. On the marsh lands of the Bay of Fundy there are large tracts of rich farm land, and the whole of the centre of the province is suitable for agriculture. There are many sections of fine farms in the southwest, and a good deal of attention is now being paid to dairy farming.

THE CITIES OF NEW BRUNSWICK

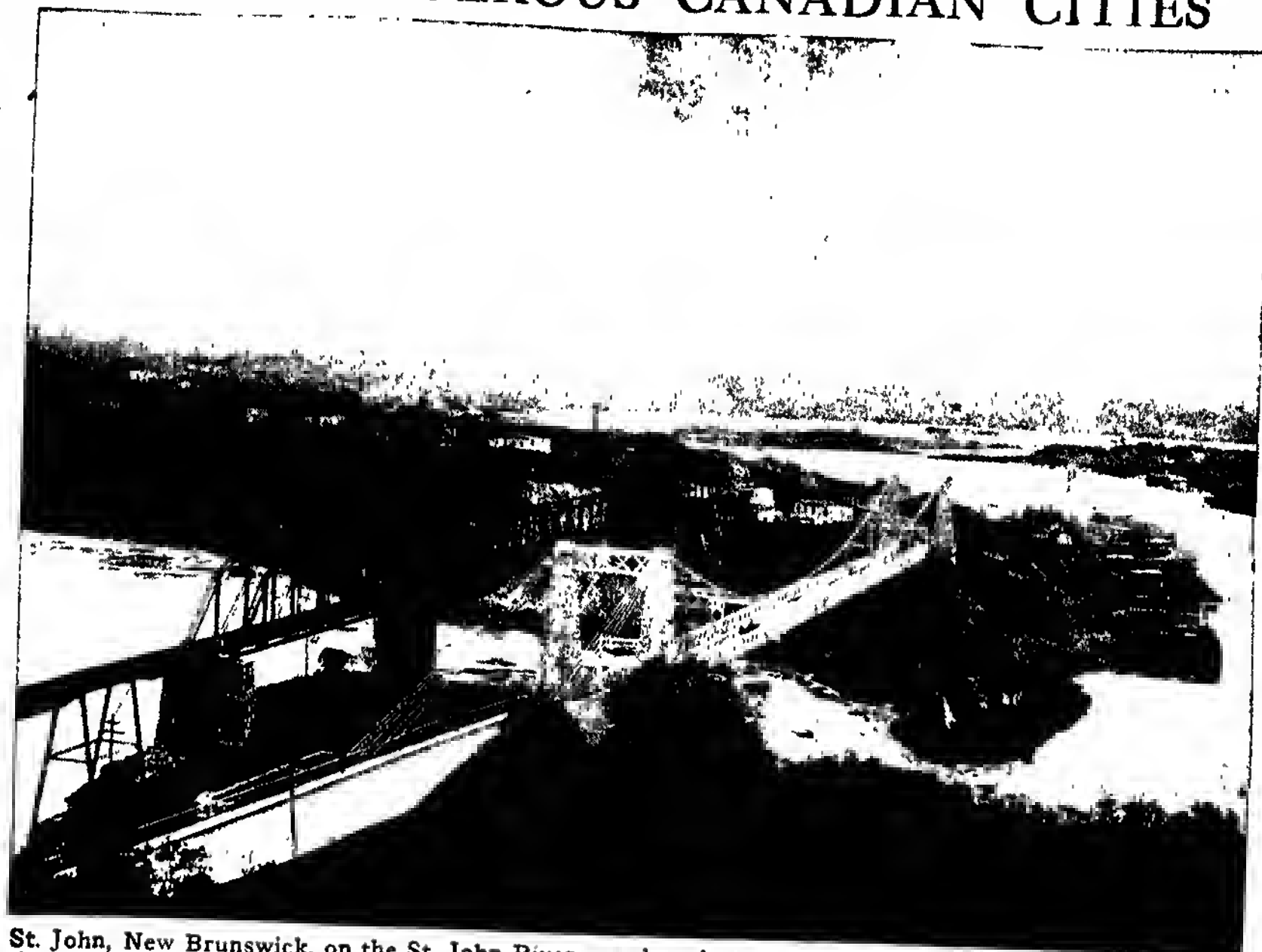
St. John is a beautiful city, built on a rocky peninsula in the harbor formed by the St. John River. It is the eastern terminus of the Canadian Pacific Railway, and as it is the chief winter port of Canada, it is a great shipping centre. It has many factories and has a large export trade, especially in lumber and grain. Moncton, the terminus of the Transatlantic Railway, is an important manufacturing centre. Fredericton, the capital city, has fine public buildings. The provincial university and normal school are here, and the city has a number of flourishing manufactories.

All these cities are built on fine harbors, at the mouths of rivers. Like all the Maritime Provinces, New Brunswick has a number of well-sheltered harbors, capable of holding large fleets.

For many years the prosperity of the provinces was held back by the emigration of their people to the West, and to the United States. Lately this has been checked. Greater interest is being taken in agriculture; the industries are flourishing, and the people look forward with confidence to the future.

THE NEXT STORY OF CANADA IS ON PAGE 5607.

TWO PROSPEROUS CANADIAN CITIES



St. John, New Brunswick, on the St. John River, was largely settled by Loyalists who left America at the time of the Revolution. It is a busy city in a beautiful situation. Though partly destroyed by fire in 1877, the inhabitants were not discouraged. Its industries and manufactures are valuable. This bridge is built over the Reversible Falls. When the tide is full, it rises above the level of the Falls.

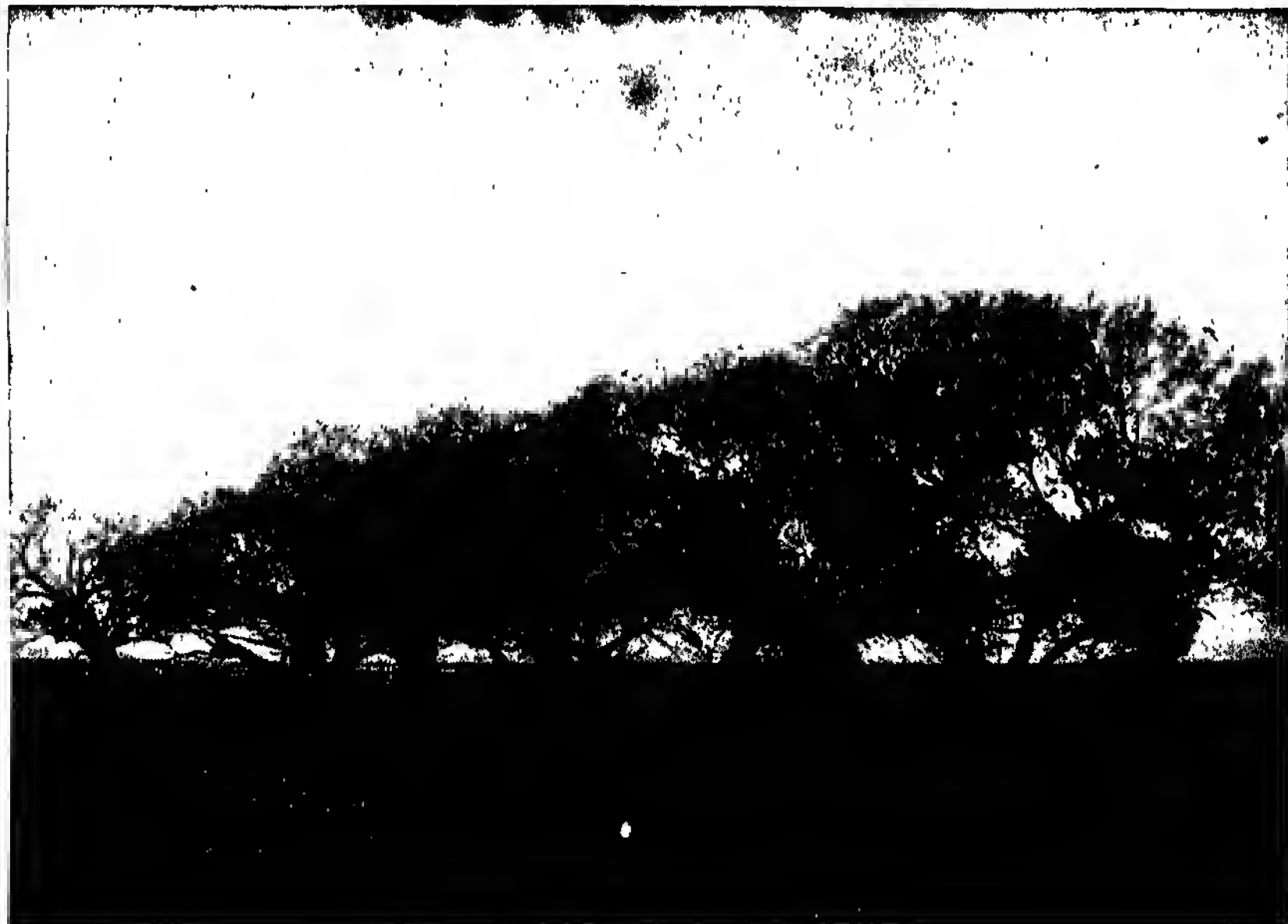


Moncton, New Brunswick, has little in common with the sleepy villages we have shown you on other pages. It is a busy, bustling city which is growing in population and wealth. Of late years the Transatlantic Railway has made Moncton its terminus, and the city has become a prosperous manufacturing centre. There are a number of valuable natural gas wells in the neighborhood.

IN BEAUTIFUL EVANGELINE LAND

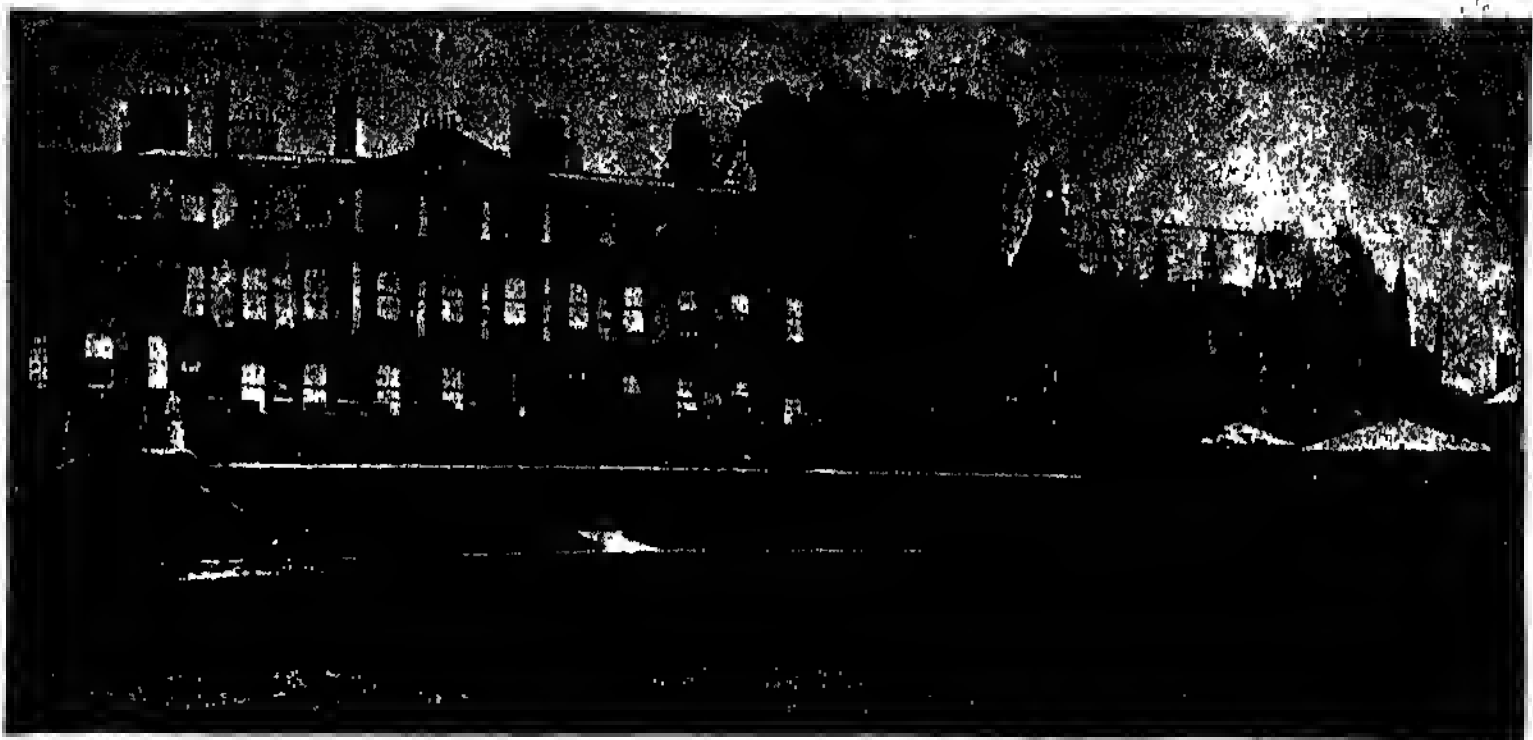


Cape Blomidon is referred to in Longfellow's poem, *Evangeline*, describing the British ejection of the Acadians in 1755. Here it is standing out in the beautiful Basin of Minas, that wonderful bay where the tides rise so high. Blomidon is at the northern end of the low line of rocky precipices which keep out the tides of the Bay of Fundy. Every year thousands of travelers visit this delightful country.



Few reminders of the time when the French held sway in Acadia now remain. The dwellings and the church where the order for the banishment of the Acadians was read have all gone, but tradition says that this row of hoary old willows was growing here in the time of *Evangeline*. We like to believe it true and to think that perhaps *Evangeline* played beneath their shadow in her childhood.

The Book of ALL COUNTRIES



Dublin Castle, the Official Home of the Irish Government.

THE STORY OF IRELAND

LIKE the history of all countries, the early history of Ireland is lost in myth. At the first date of which we can speak with certainty, the island was already inhabited by Celts; but tradition tells of ancient people who lived there long before ever the Celts crossed the Channel in little coracles, skin-covered boats such as were in use down to a late date in the Arran Islands on the western coast. Our first real knowledge of the Irish people is gained from the writings of Ptolemy, a Roman historian, in whose time, and for long after, they were known as the Scots. It is thought that even then the country had been divided into something like its present divisions, Ulster, Munster, Leinster and Connaught, under the rule of kings. But each of these divisions was subdivided into smaller kingdoms, which again were divided into clans, or septs. The chiefs and kings were not always succeeded by their eldest sons. During the lifetime of the chief, the people chose from his family the man whom they wished to govern them, and henceforth he was looked upon as the heir, and was called the "tanist." From among the four chief kings a high king, or ardri, was chosen for life,

CONTINUED FROM 5542

and some time after the period of which we are now speaking, a fifth kingdom, the kingdom of Meath, was carved from the other four and given to the reigning high king as his domain.

The religion of the people was very much like the religion of the Britons. Their priests, like the British priests, were called Druids, and next to the kings they were the most important people in the country. After them in importance came the bards, who sang of the deeds of the kings and chieftains, and carried down their traditions from generation to generation. There were schools for these bards and also for the Brehons or judges. Every third year the high king called a great council at Tara in Meath, and there the Brehons interpreted the laws to the assembled chiefs. Under the Brehon Laws, no man could inherit land, for the land was held to be the common property of the tribe; it did not, as among the Teutonic peoples, belong to the king. Therefore the king could not bestow it upon knights to hold as his men. It is important to remember this fact because it is partly owing to it that no Irish king ever gained enough power to weld the people into a nation.

THE COMING OF ST. PATRICK TO IRELAND

There are many traditions of famous men in these ancient times, to which all Irish men and women like to look back, and one of the most important was Niall of the Nine Hostages, who was high king for years. Niall made many raids into Britain, and among the captives taken on one of these was a youth of about sixteen years old, a native of Dumbarton, or, some say, of Gaul, who became the slave of a chieftain named Melchus. For seven or eight years he herded his master's flock on the mountains of Antrim. Then he escaped and went back to Britain, where he was ordained a priest. From Britain he went to Gaul, and from Gaul, some say, to Italy. But the thought of the island he had learned to love, weighed heavy on his heart, and he turned back, determined to win its pagan inhabitants to belief in the Christian faith.

He tried to land on the coast of Wicklow, but the people there would not have him, so he sailed up the eastern coast and landed on the shores of Strangford Lough. Thus it was that the great St. Patrick came a second time to Ireland, this time not as a slave, but to bring it the blessings of Christianity. Wherever he went, he made converts of chiefs and people, and before he died the whole island was won. Many stories are told of the simplicity and clearness of the teaching of the saint, and the holiness of his life. Every one knows the story of how he taught the great Christian doctrine of the Trinity by plucking a leaf of shamrock and pointing to the three perfect leaves growing from one stem. From that day to this the shamrock has been used as the emblem of Ireland.

Then began the days of Ireland's glory. Great monasteries were founded, schools were established, to which students flocked in hundreds, and learning spread among the people. Music and the goldsmith's art flourished, and some of the most beautiful manuscripts of medieval times were written by monks in hermit cells in the great monasteries. With the love of the gospel they had learned in their hearts, young men went out as missionaries to teach it to the Picts in Scotland and to pagan Angles and Saxons in Britain, to the Gauls in France,

to the Teutonic tribes in the forests of Germany, to the Frisians on the shores of the Baltic, to the Lombards in Northern Italy.

THE LEARNING OF THE IRISH MISSIONARIES

At a time when the dense darkness of ignorance covered Europe, Irishmen were learned. The fame of their learning spread, and crowds of young men from other lands flocked to the monastery schools in Ireland to be taught. Irish missionaries carried the light of religion abroad, and schools and monasteries were founded by them in central and eastern Europe. One of the greatest of these missionaries was St. Columba, who founded the monastery on Iona; another was Aidan, who converted all of northern England; St. Gaul, who gave his name to a town and canton in Switzerland, was still another; and these are only a few of the names that are remembered. But through all this life and learning, the lot of the people at large does not seem to have been happy. The high king, or *ardri*, was never strong enough to keep peace in the land. The kings of the provinces, and the chiefs of the clans were at constant war with one another, and there was no unity among them.

BRIAN BOROIHME, WHO DESTROYED THE POWER OF THE DANES

The time was coming when unity was sorely needed. At the end of the eighth century the Northmen reached the island, and brought ruin and misery in their train. They first landed at Dublin, where they built a town, which they made their headquarters, and during the next two centuries they established themselves everywhere, along the bays and rivers, that their long black ships could penetrate. They came in numbers great enough to build strong towns and make fortified settlements, and wherever they went they grievously oppressed the people. At length, toward the end of the tenth century, Brian Boroihme, or Boru, or Boruma, king of Munster, determined to put an end to the havoc that they continued to work. To this end he fought against and defeated Malachy, the high king, who had already himself defeated the Danes—the Malachy who “wore the collar of gold that he won from the proud invader.” Then Brian made himself high king, and at the head of the largest armies that he could mus-

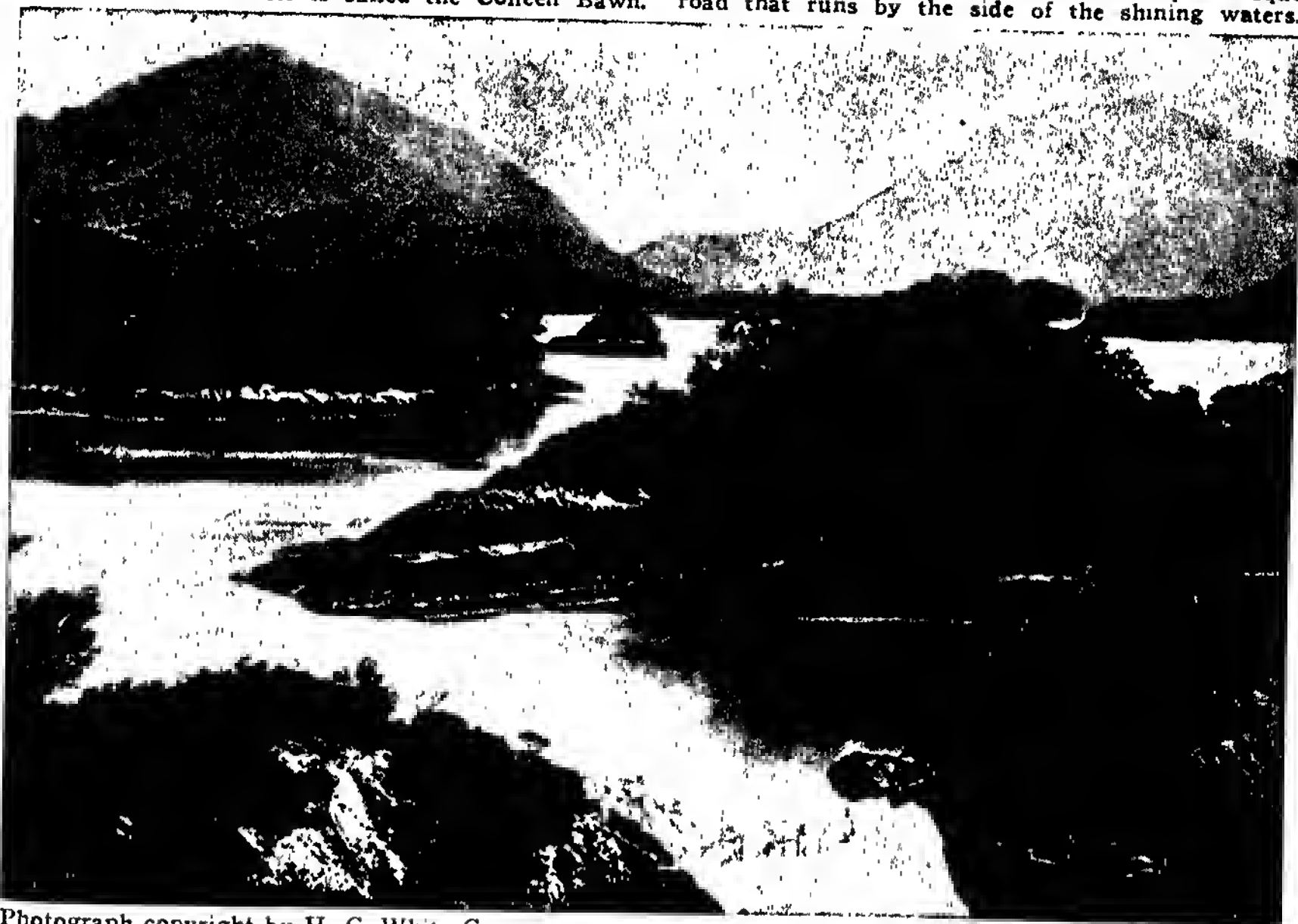
THE BEAUTIFUL LAKES OF KILLARNEY



This is the middle lake of Killarney, called Torc Lake. The rock in the water is called the Colleen Bawn.



Here we see the upper lake, with the picturesque road that runs by the side of the shining waters.



Photograph copyright by H. C. White Co.

There are three lakes at Killarney. The upper lake, shown in this picture, is the most beautiful, though the smallest. The margins, with the hills beyond, have been called "the most magnificent shore in the world."



From this picture we get an idea of the luxuriant growth of the flowers and other plants at Killarney.



The lakes are joined together, and here we see the meeting of the waters of the middle and lower lakes.

ter, he defeated the Danes again and again until he forced them to pay him tribute and to keep within their seaport towns.

For twelve years Brian seems to have been strong enough to give peace to the harassed land. Then one of the sub-kings of Leinster rose in rebellion and the Danes took advantage of the opportunity, that this fresh warfare gave them, for a last effort to gain supremacy in the island. Calling to their aid their friends from Northumbria, from Anglesea, and the Isle of Man, and from the islands of the Scottish coast and the Orkneys, they gathered a large host and prepared for battle at Dublin. On his side Brian had not been idle. With the men of Munster and Connaught at his back, and with the aid of his old enemy Malachy and the men of Meath, he marched to the fray. The two armies met at Clontarf, outside Dublin, on Good Friday, of the year 1014. The battle raged all day and victory remained with the Irish. But Brian's eldest son, Morrogh, and his grandson Thorlogh fell fighting, and Brian, who had remained in his tent to pray, was slain by the Danes as they fled. The battle put an end to the Danish power, but it also ended any hope of the people becoming a united nation, for no ardri arose who was strong enough to keep peace for a sufficient length of time to accustom the people to a settled rule, and the history of the next hundred and fifty years is a story of constant quarreling between the kings.

HOW THE NORMAN KING CAME TO IRELAND

In the twelfth century, Dermot Mac-Murrough, king of Leinster, carried off Dvorgilla, the beautiful wife of O'Rourke, prince of Brephni, in Connaught. O'Rourke went for help to his over-king, Roderick O'Connor, who was also ardri, and Dermot was forced to flee from the country. Burning with a wish for vengeance, he sought the aid of Henry II of England. Henry was too busy with his wars in France to take the matter up himself, but with his permission Dermot enlisted the aid of Richard Clare, Earl of Pembroke, known as Strongbow, Maurice Fitzgerald, and a number of other barons. As a reward for his help, Dermot promised that his daughter Eva should be the wife of Strongbow, and that Strongbow should succeed him as

king of Leinster. The next year the barons invaded the east and south of the country. Dermot was re-established in his kingdom, and the barons established themselves in the east, along the broad estuaries which run up into the heart of the country, and in the seaport towns. The Irish chiefs made a brave fight against the invaders, but were almost everywhere defeated, and when Henry II, fearing that his barons would become too powerful for him, went over with a large army, most of the chiefs as well as the barons did him homage and promised allegiance to him as their overlord.

English law went into force in the land that fell under the power of the barons, while in the part of the country that was ruled by the chiefs, the old Irish law of the Brehons was kept. But as time went on, some of the barons, who wished to gain power as Irish chieftains, cast aside the English law and put themselves under the Brehon Laws. This, of course, was treason in the eyes of the king, and to prevent repetitions of the offence, a law called the Statute of Kilkenny was passed in the reign of Edward III, which forbade intermarriage between the two peoples, and declared it unlawful to wear Irish dress in English territory. The law had little effect, however, and gradually a large part of the country which had been English fell back under Irish rule, and many of the people of English descent became more Irish than the Irish. This was the state of affairs at the close of the Wars of the Roses, but now we come to another part of the story.

ENGLISH LAW ENFORCED BY HENRY VIII

During the Wars of the Roses, the power of the barons in England was broken. It was otherwise in Ireland. There, although chiefs and barons alike recognized the king of England as overlord, the chiefs really looked upon themselves as independent kings, and the barons had become as powerful as the great French nobles ever were. With the Tudors a change came. Their efforts to reduce the power of the chiefs and barons led to many wars and rebellions, during which the land was made desolate, but it is useless to attempt to tell the story of these ceaseless wars, and their causes. It is enough to say that by the end of the reign of Elizabeth, practically the whole island had been conquered.

The thunder-clouds close o'er it, which when
rent
The earth is cover'd thick with other clay,
Which her own clay shall cover, heap'd and
pent,
Rider and horse,—friend, foe,—in one red
burial blent!

THE BIVOUCAC OF THE DEAD

This poem, by Theodore O'Hara, was written in memory of the Kentucky soldiers who were killed in the Mexican War. Part of it is inscribed on a monument in the burying grounds wherever the soldiers of the United States lie at rest.

THE muffled drum's sad roll has beat
The soldier's last tattoo;
No more on life's parade shall meet
That brave and fallen few.
On Fame's eternal camping ground
Their silent tents are spread,
And glory guards, with solemn round,
The bivouac of the dead.

No rumor of the foe's advance
Now swells upon the wind;
No troubled thought at midnight haunts
Of loved ones left behind;
No vision of the morrow's strife
The warrior's dream alarms;
No braying horn, nor screaming fife,
At dawn shall call to arms.

The neighing troop, the flashing blade,
The bugle's stirring blast,
The charge, the dreadful cannonade,
The din and shout are past;
Now war's wild note nor glory's peal
Shall thrill with fierce delight
Those breasts that never more may feel
The rapture of the fight.

Like the fierce northern hurricane
That sweeps his great plateau,
Flushed with the triumph yet to gain,
Came down the serried foe.
Who heard the thunder of the fray
Break o'er the field beneath,
Knew well the watchword of that day
Was "Victory or death."

Long had the doubtful conflict raged
O'er all that stricken plain,
For never fiercer fight had waged
The vengeful blood of Spain;
And still the storm of battle blew,
Still swelled the gory tide;
Not long, our stout old chieftain knew,
Such odds his strength could bide.

'Twas in that hour his stern command
Called to a martyr's grave
The flower of his beloved land
The nation's flag to save.
By rivers of their fathers' gore
His first-born laurels grew,
And well he deemed the sons would pour
Their lives for glory too.

Sons of the Dark and Bloody Ground,
Ye must not slumber there,
Where stranger steps and tongues resound
Along the heedless air;

Your own proud land's heroic soil
Shall be your fitter grave;
She claims from war his richest spoil—
The ashes of her brave.

Rest on, embalmed and sainted dead,
Dear as the blood ye gave;
No impious footstep here shall tread
The herbage of your grave;
Nor shall your glory be forgot
While Fame her record keeps,
Or Honour points the hallowed spot
Where Valour proudly sleeps.

You marble minstrel's voiceless stone,
In deathless song shall tell,
When many a vanished age hath flown,
The story how ye fell;
Nor wreck, nor change, nor winter's blight,
Nor Time's remorseless doom,
Shall dim one ray of glory's light
That gilds your deathless tomb.

THE GREAT ADVENTURER

The author of this song is not known. It was written some time in the 17th century by an English poet who most probably belonged to the so-called Cavalier Poets distinguished for the melody of their verse and their sprightly fancy.

OVER the mountains
And over the waves,
Under the fountains
And under the graves;
Under floods that are deepest,
Which Neptune obey;
Over rocks that are steepest
Love will find out the way.

Where there is no place
For the glow-worm to lie;
Where there is no space
For receipt of a fly;
Where the midge dares not venture
Lest herself fast she lay;
If love come, he will enter
And soon find out his way.

You may esteem him
A child for his might;
Or you may deem him
A coward from his flight;
But if she whom love doth honor
Be conceal'd from the day,
Set a thousand guards upon her,
Love will find out the way.

Some think to lose him
By having him confined;
And some do suppose him,
Poor thing, to be blind;
But if ne'er so close ye wall him
Do the best that you may,
Blind love, if so ye call him,
Will find out his way.

You may train the eagle
To stoop to your fist;
Or you may inveigle
The phoenix of the east;
The lioness, ye may move her
To give o'er her prey;
But you'll ne'er stop a lover;
He will find out his way.

Henry VIII put an end forever to the Brehon Laws, and declared the English law in force throughout the island, and as he was strong enough to exact allegiance from the chiefs, the law was obeyed. He also divided part of the land into counties, and so began to break up the boundaries of the smaller kingdoms.

CROMWELL AND HIS IRONSIDES SWEEP THE LAND

In the reign of James I, a colony of Scottish Presbyterians was brought over, and settled in the northeastern counties of Ulster in place of some of the Irish owners, whose lands were declared forfeited. These were the ancestors of the Ulstermen of whom we hear to-day. James, who was always in need of money,

Shannon to live, while the land which was thus made vacant was granted to Cromwell's soldiers and others upon whom he could rely.

After the accession of Charles II, much of this land was returned by what was called the Act of Settlement, but many of the new occupants were left in possession, and this created fresh discontent. Still, all might have gone well, and the country might have made the best of things and settled down in peace, if it had not been for the lack of wisdom shown by James II, who, because of his foolish acts, lost the throne of England, and fled to France. The next year, however, he landed at Kinsale, in the south of Ireland, hoping that, with Ireland as



The old Irish Parliament House in Dublin, which is now used as a bank.

also exacted large sums from landowners as the price of the right to keep their land. His example was followed by Charles I, and this and the tyranny of the Earl of Wentworth brought about a rebellion in 1641, which lasted throughout the Civil War in England. Those who were not in rebellion in the country were in favor of the king, and when Cromwell, after the execution of Charles, had established the new government firmly in England, he crossed over with his Ironsides and began a ruthless war against both royalists and rebels. Thousands were put to the sword, crops were destroyed, castles ruined, houses burned, and when it was all over, numbers were sent to the West Indies to work as bond servants. Many of the estates were confiscated, and most of the people who had owned them were forced beyond the

a base, and with the help of an army from France, he might be able to drive William III out of England, and make himself king again. The people of the south and east of Ireland rose in his favor. The people of the north rose against him. The gates of Londonderry were closed against his army, and a new war was begun.

THE WAR BETWEEN JAMES II AND WILLIAM III

Four things stand out in this war,—the siege of Londonderry, which held out against an overwhelming force until at the end of fifteen weeks it was relieved; the battle of the Boyne, where James ran away and William was victorious; the battle of Aughrim, where the Irish army, under a French general named St. Roth, fought with splendid valor against great odds, but was defeated; and the

THE STORY OF IRELAND

siege of Limerick, which is just as famous as the siege of Londonderry. To end the war, King William's general in command offered to let the garrison march out, and, if they wished, to sail for France. This was agreed to, and all except about a thousand followed their general, Patrick Sarsfield, into exile. In the years that followed, many thousands of young men followed their example, and during the wars of the eighteenth century the

of years, and only came to an end with the life of the sovereign. Still greater injustice arose from what is called the Penal Code, a series of laws enacted in the reign of William III after the war of which we have just been speaking. They were passed under the influence of the fear caused by the invasion of James II with a French army, and by the intolerant laws made by a parliament which had been called by James. Under



O'Connell Street, Dublin's finest thoroughfare, showing the O'Connell Monument.

"Wild Geese of Ireland," as the Irish soldiers were called, were famous on nearly every battlefield of Europe.

At the time when Henry VII was trying to break the power of the Irish nobles, a lord deputy, named Poynings, whom he sent over, had a law passed by which only laws which had been submitted to the king and the Privy Council of England could be passed by the Irish parliament. At the time this law was passed only a very small part of the country was really affected by it, and it did curb the power of the barons. Later, however, it created injustice, and this was strongly felt as time went on. There were other causes of complaint about the parliament. For instance, the parliament was not elected for a stated number

this Code, Roman Catholics had no political or religious rights, and there were irritating laws about education. There have been misunderstandings between the people of England and Ireland, and mistakes have been made on both sides, but these laws we must remember were made by the Irish parliament.

THE UNION OF THE IRISH PARLIAMENT WITH THE ENGLISH PARLIAMENT

Late in the eighteenth century, chiefly through the work of Henry Flood, a law was passed which provided that parliament should be elected for eight years only. Flood's work was taken up by Henry Grattan, and through his influence an act was passed by the English parliament, in 1782, which repealed the declaration of its right to control

the Irish parliament, and the same year Poynings' Act was repealed. Then Grattan began to work for the repeal of the Penal Code; but beyond the passing of an act in 1793 which gave Roman Catholics the right to vote, he was unsuccessful.

The Irish parliament remained independent for eighteen years, but in 1798 some of the people rose in rebellion. The rebellion was put down, and after it was over, William Pitt, who was then prime minister of England, thought that it would be a good thing if a union of the two parliaments were made. In spite of opposition, his proposal was carried out, and the union was made in the year 1800 by a law passed by the Irish parliament, which enacted that Irish members should sit in the British House of Commons and Irish peers in the House of Lords at Westminster.

At the time of the Union, Pitt promised that the Penal Code should be repealed; but George III would not listen to such a proposal. The question was dropped at that time, but through the work of Daniel O'Connell, all these unjust laws were repealed in 1829. Daniel O'Connell also began to work for repeal of the Union, and the agitation for repeal, which later on got the name of agitation for Home Rule, has continued to this day.

THE CAUSES OF THE FAMINE OF 1847

As we have learned in other places in the book, a belief was long held that colonies existed chiefly to supply raw material for the use of the mother country, and that, therefore, the commerce or manufactures of a colony which interfered with the commerce or manufactures of the mother country should be repressed. Of course we know now that such a belief is quite wrong, but at least until the end of the eighteenth century it was honestly held by almost every one. Its grave injustice was seen by only a few until after it had led to the American Revolution. Poynings' Law gave color to the belief that Ireland was a colony. It was thought that her cattle trade and woolen manufacture interfered with English trade and manufactures. Therefore, both were repressed, and except for the linen manufactures in the north there was practically no industry left for the people except the cultivation of the land.

In the middle of the nineteenth century there were over eight million and a quarter people living in Ireland, and nearly eight million of this number were attempting to live on the produce of the land. This was much too great a number for a country the size of Ireland to support, even if every acre were fit for cultivation, and in Ireland there are large tracts of bogs and barren land, and tracts of mountain country. In such a case as this, the failure of even one crop is sure to bring a catastrophe, and such a catastrophe happened in Ireland.

In the year 1847, the potato crop, upon which the poorer people in the country had learned to depend largely for food, was killed by a mysterious blight. The consequence was a dreadful famine. It was followed by sickness, which the people, weakened by hunger, could not resist, and hundreds of thousands died. This was the beginning of a great emigration to the United States and the British overseas dominions, and within fifty years the population was reduced to about one-half.

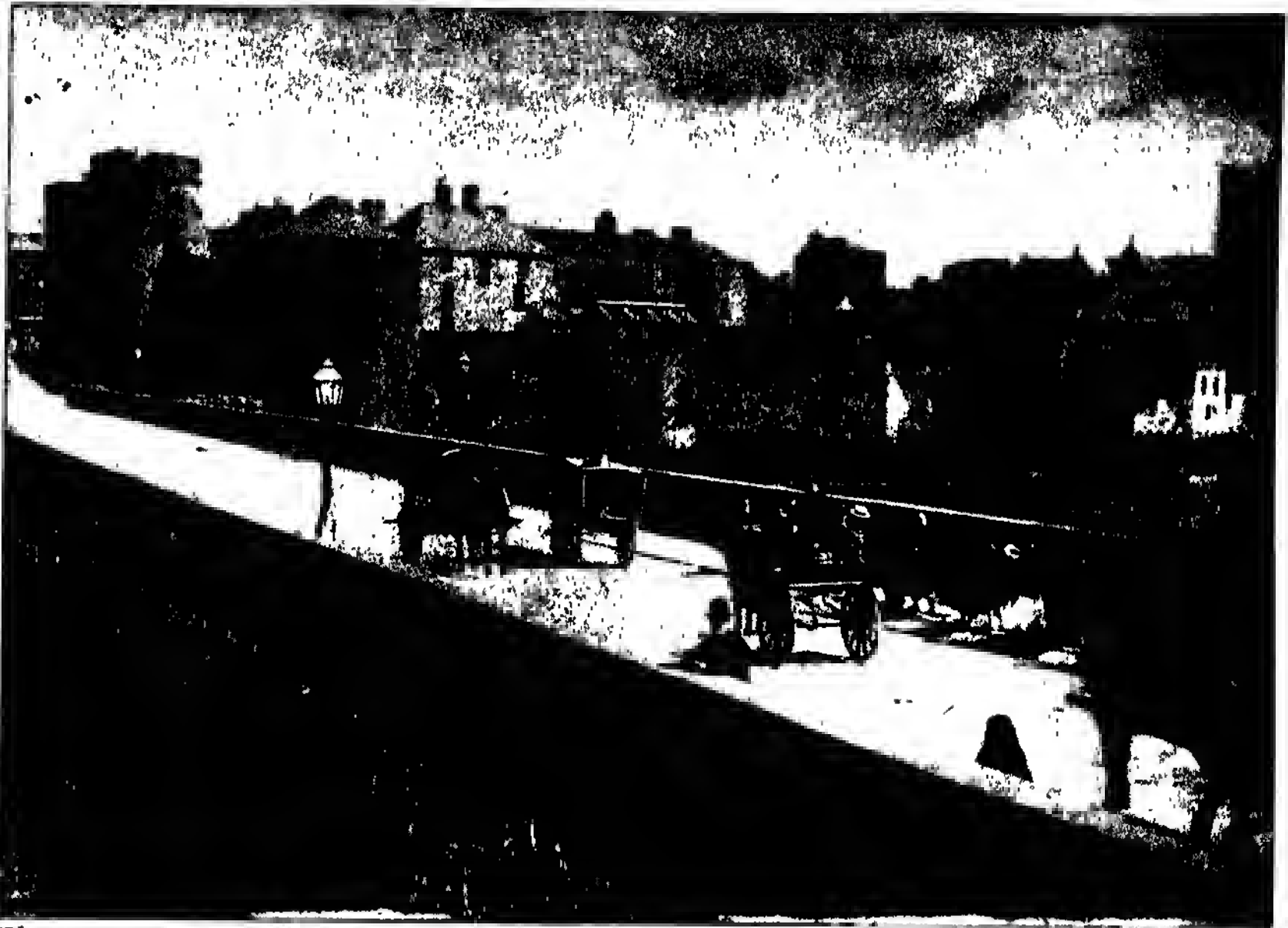
About thirty-five years after the famine of 1847, a new leader arose, named Charles Stewart Parnell, under whose guidance disputes about the possession of the land began. To understand their cause, we must go back a little way.

In the sixteenth and seventeenth centuries, large estates which were confiscated in the wars were granted to Englishmen or to Irishmen who were loyal to the king, while large tracts of land remained in possession of the descendants of some of the ancient chieftains, and of the great Anglo-Norman barons. Thus, much of the land belonged to members of a few families. Naturally these large estates could not be cultivated by their owners, so they were rented to tenants. Most of these tenants were very poor, partly because the methods of cultivation were too primitive to make the land productive and partly because the rents were as a general rule too high, especially after cheap grain imported from America reduced the price of grain raised in Ireland.

SOME OF THE REASONS FOR CONFLICT

Life was not easy for people who had large farms, and for the men who had farms of only a few acres it was very

IN AND NEAR LIMERICK



The wall and towers shown here are part of a Norman castle, known as King John's Castle, which was built in the time of King John to hold the bridge across the Shannon at Limerick. The bridge, which is modern, is called Thomond Bridge, in memory of the old kingdom of Thomond, in Munster. The conveyance which is crossing the bridge is known as a side car, and is peculiar to Ireland.



Peat, which is much used for fuel by the country people in Ireland, is cut in bricks and piled in loose heaps to dry. Cutting peat is not always such easy work as the picture shows, for there is a great deal of water in many bogs. Trenches are dug to drain them, but the task of getting out the peat is very disagreeable. Machinery is now sometimes used to dig peat, and heat is used to dry it.

hard. But there was little by which any money at all could be made except farming. There was a constant struggle to obtain farms, and as long as men could be found who were willing to attempt to pay high rents, few landowners were willing to lower them. When crops failed and prices went down, and farmers were unable to pay their rents, some landlords said farming did not pay, and instead of letting all their land for agriculture, turned the little farms into large fields for pasture. The landlords, of course, thought they had a right to do as they would with the land, because it was theirs, just as they thought they were right to charge as much rent as they could get. On the other hand, there had always been a feeling, which came down from the time of the Brehon Laws, that the land belonged to the people. Small farmers found it hard to get food for their families in bad seasons, and after a time, men who could not pay the high rents to which they had agreed, or whose rents had been raised, began to refuse to pay any rent at all. They were helped in their refusal by a society called the Land League, which was organized about the time that Charles Stewart Parnell became the leader of the majority of the Irish members in the House of Commons. He did not organize the society, but he gave it his support, and its members kept him at the head of the Irish party almost until his death. The Land League obtained a strong hold over Ireland, during the years it was in existence, and had a great deal of influence on the country. Many people thought its influence was all good, many thought it all bad. *It is quite true that some of its members used it as a cloak for deeds of which others were ashamed, but it made Irishmen begin to think they had a country to be lived in, not a place to run away from as soon as they were grown up. *

Until Parnell gained the leadership, the majority of the Irish members of Parliament had belonged to one or other of the great political parties. Parnell formed them into an Irish party, to fol-

low his lead on all questions, and this gave the Irish members much more power in Parliament than they had had when they were divided.

THE FARMERS BECOME OWNERS OF THE LAND

Meantime great efforts were being made by the government to do away with the misunderstandings between the English and the Irish people, to help the country toward prosperity, and to end strife. It was thought that because Irishmen had so much love for the land, it would be better if the land belonged to the people who actually worked it, so laws were made by which the government has been given power to lend money to tenants who wish to buy their farms, whenever the owner of an estate is willing to sell. Many people have taken advantage of these laws, and much of the land is now owned by the men who cultivate it. In addition to this, a commission was appointed to fix rents where the tenants think them unfair.

Of late years, Ireland has become much more prosperous than it had ever been. Co-operative societies have been organized to enable farmers to help one another in buying, and in finding good markets for their produce, more agricultural schools have been established, creameries have been built, and, particularly in the West, schools have been established to teach cottage industries.

In 1914 a Home Rule bill was passed. The province of Ulster objected to Home Rule, however, and threatened to fight if the Act of Union were repealed. Just then the Great War broke out, and in the face of the common danger, the question of Home Rule was postponed. But as the war went on some of the people became impatient. They listened to the speeches of men who told them they were being unjustly treated, and in 1916 a society, called the Sinn Fein, made an attempt at rebellion, which was put down by force. It is unfortunate that all the people of Ireland cannot agree on the kind of government they want.

THE NEXT STORY OF COUNTRIES IS ON PAGE 5651.



An Old Celtic Cross, still standing at Monasterboice, Ireland.

The Book of STORIES

WHAT THIS STORY TELLS US

NOWHERE are there so many legends and tales of the old days as in the German states. Some story is connected with every stream, forest, mountain or castle, and dozens are told of some particularly romantic spot. Though the events of this story are supposed to happen in what is now Belgium, it belongs with other German tales. It was first told by a German writer seven hundred years ago, and several different versions, differing a little in names and events, have been written since. The great German composer, Richard Wagner, of whom you are told in another place, took the story for his opera of Lohengrin. If you have not heard the whole opera, you have no doubt heard a part of it called the "Wedding March," which is often played at weddings.

LOHENGRIN, OR THE SWAN-KNIGHT

LONG ago, when Henry the German ruled over nearly all of Europe, and made successful war on those fierce destroyers, the Huns, some strange things happened, of which I shall tell the story.

The Duke of Brabant, one of Henry's vassals, lay on his death-bed in the ducal castle at Antwerp. He was thinking of his children, Godfrey and Elsa, whom he must leave behind, and trying to choose from all his nobles the one he might best trust with their care, and the government of the duchy while they were children. At last he called Frederick, Count of Telramund, and charged him to rear the children in all virtue and nobility, and to guard the land for them till they should be grown and able to rule for themselves.

One day Elsa, who was older than her brother, led him into the forest near the castle. They ran along joyously picking flowers, and shouting to each other over each new-found blossom. "See!" cried Elsa, once when she had found a very lovely one, "Godfrey, see this pretty hyacinth." But her brother did not run to her side with his gay laugh, and when she looked up he was gone. She ran hither and thither, calling and searching, but at last, weary and weeping, she went back to the palace alone, where she was scolded and shut up in prison because she could not tell what had become of him.

CONTINUED FROM 5482

It was not long after this that King Henry came to Antwerp to get aid from the people of Brabant in his campaign against the Huns. Frederick called the people together on a meadow, near the River Scheldt, while he, with his wife and the nobles of Brabant, sat high on the bank above the meadow; and Henry with his men sat near him, but on the opposite side of a great oak, whose branches shaded them all.

When the people had become silent, King Henry said: "Frederick, Count of Telramund, before I call thy people to war, tell me, an thou canst, what is this I hear of the disappearance of thy ward, Godfrey of Brabant, and the charges against the Princess Elsa, his sister, and of thy claim to the late duke's crown?"

And Frederick replied: "I thank thee, gracious King, that thou hast come here to judge, and I will gladly tell thee all the truth. Elsa, by her own hand, slew her brother. Because of this I could not marry her, as the late duke had given me the right to do, but instead I married Ortrud, daughter of an ancient line of dukes. Now I claim the crown, both in my own right, as next of kin to the late duke's children, and in the right of Ortrud, my wife, for Godfrey, being dead, cannot inherit, and Elsa has lost the right through her crime."

"A grave charge," said the king; "let the accused be brought forward."

Elsa was then led before the king. She was fair and lovely, but seemed as if in a trance. At first she could say nothing, but when the king kindly urged her to confide in him, she began in a strange dreamy voice:

"Lonely and sad, I prayed to Heaven. My grief, so dolorous, charged all the air about with deepest pain. Then I fell asleep, and to me in my dreams a knight in glittering armor came and comforted my heart, and he will come again and be my champion to prove my innocence."

Then the king turned sternly to Frederick, and bade him be sure of the truth of his accusation ere he challenge such a vision; but Frederick appealed to the nobles, who raised a great shout, and said not one would doubt his truth.

King Henry drew his sword and thrust it in the ground, saying:

"Speak, Frederick, Count of Telramund, wilt by deadly combat submit thy cause to God?"

Bowing before him, Frederick replied, "I will."

"And thou, Elsa of Brabant," said the king, "wilt choose a champion to do deadly battle for thy sake?"

"Yea, most noble King."

"Whom choolest thou?"

Elsa looked up at the king, and then away into the far distant sky, and spoke as if to some one far, far away, and yet very, very near: "I ask the God-sent warrior to be my champion, and he shall wear my father's crown and take me for his bride."

Then, at the king's command, the herald stood up and shouted: "He who, in God's name, fights for Elsa of Brabant, come forth."

All the court and people listened and looked, but no champion appeared. But as Elsa listened, she seemed to awaken from her sleep. She stepped before the king, and spoke in a clear, steadfast voice, looking straight into his eyes: "My dear King, let the herald call again, I pray thee, for my knight lives far and has not heard the summons."

The herald called again, but still there was no response. Then Elsa knelt and prayed: "Great Heaven, thou didst bear to him my sad lament, thou didst send him to comfort me. Send him now again, I pray, to champion my cause and set me free. Oh, let me see him now as once before."

Then King Henry and those highest on the bank saw afar off a ship approaching. The ship was drawn by a swan, and in its prow a knight, dressed in glittering armor, stood upright, looking toward the shore. "Seel see!" shouted the people. "A boat! A swan! The wonderful knight!" Then all sat breathless while the boat drew near, and the knight, alighting, turned and bade his swan farewell:—

"Thank thee, thank thee, dear my friend,
Sail across the deep blue sea,
When thou comest here again
May it be sweet joy to thee.
Be true, dear swan, farewell, farewell."

Then he turned and saluted the king, who asked him wherefore he had come, and he replied: "Most noble King, I come to champion a maiden, who is in great distress because of a false accusation, whereof I will soon cause all the world to know her innocent."

Then he turned to Elsa, and said: "Wilt accept me, Elsa, an they choose me to be thy champion?"

Elsa knelt before him, and called him her hero, her champion, her knight, and said she was wholly his.

"If I am victorious, wilt be my wife, Elsa?"

"Yea."

"But, Elsa, thou must promise never to ask my name, my rank, nor whence I came."

"Never will I ask these questions, believe me."

"Elsa, hast well understood my meaning? Think, never must thou ask nor even think these questions."

"My shield, my angel, my savior, thou who believest in mine innocence, how great would be my sin to doubt thee! Verily, even as thou deliverest me in my need, so shall I truly keep thy command."

"Elsa, I love thee."

Then Elsa raised her face, and he stooped down and kissed her.

After this he turned toward the assembly, raised his hand for silence, and said: "Hear ye, most gracious King, noble Lords and warlike people, to all I proclaim Elsa of Brabant innocent, and to thee, Frederick of Telramund, I say, God's judgment shall soon prove thy charge is false."

His words rang so true that all the

nobles begged Frederick to renounce his charge and yield the victory to the strange knight without battle; but Frederick refused. He believed the truth of his accusation, he said, and would fight for it, and trust to God to establish the right. So King Henry commanded that preparations be made for the combat.

Heralds paced off the ground, and called aloud to announce the cause of the battle and to warn all against interference. Then, at a signal from the king, the fight began; but it did not last long, for Frederick was soon overthrown, and his adversary, standing over him with drawn sword, said: "Through Almighty God thy life is mine, but I will not take it. Go, make thy peace with thy Creator."

Then King Henry and all the nobles and people raised a mighty shout, proclaiming him the champion of truth, and amid great rejoicing he and Elsa were carried into the palace.

Ortrud and Frederick were alone outside. They could hear the sounds of rejoicing, but they might not participate. "Most hateful woman, deceiver!" said Frederick to Ortrud, "through you I am wholly undone and stand dishonored as the champion of falsehood: I, who ever loved the truth!"

"My husband, Frederick, Count of Telramund, why do you speak so to me?"

"Do you ask, deceiver? You! Did you not tell me that with your own eyes you saw Elsa kill her brother? By your lies you led me to love you and marry you. You made me hate her. Oh, and she is pure and you are vile! Viper! I hate you! Leave me!"

Then Ortrud, by sly and artful words and winning ways, made Frederick again believe in her, and distrust Elsa and her knight. She made him believe that it was by magic and not by God's strength that the stranger had beaten him in battle, and she told him that, if the Swan-knight could be made to tell his name, his strength would immediately leave him. They must try to make Elsa break her vow and ask the forbidden questions.

She then waited outside the palace till Elsa appeared on the balcony, when, by piteous words, she won her compassion and admission to the palace, where she tried in vain with subtle words to make

the young girl believe that her deliverer was an evil magician.

The next morning, Elsa and her companions marched in stately wedding procession to the cathedral; but just as she was about to enter the door, Ortrud sprang angrily forward and forbade her to go farther. Then, in the hearing of all, she repeated the lies she had told in secret the night before.

While Elsa stood, pale and troubled, doubting what to do, the other procession, with the king and bridegroom, came up.

"Elsa," said her knight, "who is speaking to thee? My love, is she teaching thee to doubt?"

But before Elsa could answer, Ortrud sprang forward, and challenged the king to put the stranger to the test. "Ask him his name," she cried, and then repeated all her charge of sorcery and evil magic. In the meantime, Frederick had found time to whisper to Elsa: "He will leave you in a day unless you break the magic spell by causing him to tell his name, his birth and whence he came. Break the spell and he will abide at thy side for ever more."

The Swan-knight said to Elsa: "Though the King and all his nobles ask me I need not answer, but to thee, if thou doubtest and would ask me these questions, then must I reply. What is thy wish?"

Elsa hung her head a moment, then looked up into her deliverer's eyes and said: "Though all the forces of doubt assail me, love will conquer, and I will keep my vow."

Then the procession marched with stately joy into the cathedral and the marriage ceremony was performed; but when all the festivities were over and Elsa was alone with her husband, the words of Frederick haunted her mind with terrible meaning. Would he leave her? She could not bear the thought. She began to question him, and with every question her terror grew. At last the forbidden questions had slipped the barrier of her lips: "Beloved, what must I call thee? Ah, but tell me thy very name."

"Elsa, ask not that."

"Yea, yea, tell me thy name, whence camest thou? What is thy race, thy rank?"

Then she swooned, and the Swan-

knight laid her gently on the couch, and tended her till the morning, when he caused all the nobles and warriors, and the king with his train to assemble again on the bank of the river, and thither he repaired with Elsa, his wife, and there before them all he answered her questions:

"Lohengrin is my name, I am son of Parzival, who is King of the Holy Grail. I came from Monsalvat, and the Castle of the Grail. Thither I must now return. I came to succor Elsa, whom I love, but no Grail-knight may ever abide where doubt exists, nor where his name is known."

So he kissed Elsa, and was about to step into the boat, which had again come

to shore, when Ortrud confessed her crime. She had changed Godfrey into a swan. "Ha, ha!" she shrieked, "'tis he that draws thy boat!"

Then Lohengrin knelt and prayed, and lo, a snow-white dove appeared to draw the boat, the swan sank into the river, and rose again as Godfrey, whom Lohengrin grasped by the hand, saying: "Dear friend, rule well thy land and aid thy king. Be true, dear one; farewell, farewell." Then he departed, but as the boat set off, Elsa's dead body lay on the shore.

They say her spirit sailed away in the ship with her husband, whom she had lost through the wicked advice of Ortrud.

A LITTLE GAME OF THINKING

"**H**AVE you ever played 'Thoughts'?" asked Uncle Harry.

The children had been bathing most of the morning, and prowling around all the afternoon, and now they were really too tired to do anything but sit still in the shade.

"No," said Phyllis. "Is it a game?"

"Yes," said Uncle Harry, "and a good one. First of all we choose a subject to think about, and then we let our thoughts travel on from that subject for one minute, and then we tell each other where they have led us."

Sid looked puzzled.

"I'll give you an example," said Uncle Harry. "We'll say that the subject chosen to start from is the grasshopper over there. Now take my watch, Sid, and tell me when a minute has passed."

Sid took his uncle's watch and kept his eyes glued to it.

"Time!" he called presently.

"Go ahead, uncle!" said Phil.

"The grasshopper made me think of the grass," said Uncle Harry. "And the grass made me think of lawns. And lawns made me think of tennis. And tennis made me think of the court at home. And home made me think of Boston. And Boston made me think of the office. And the office made me think of the city. And the city made me think of the State House. And the State House made me think of the sun shining on the dome. And that's as far as I got. So, you see, the grasshopper took me a long way from this pleasant spot beside the bay."

"Now let us try," said Phyllis. "You choose the subject, uncle."

Uncle chose the fishing-boat out in the bay, and he took the watch. Phil's eyes were soon gazing, unseeing, across the water, while Sid flung himself on the grass, dug his elbows into the ground, and put his hands over his ears, as though in shutting out sound he were also shutting in thought.

"Time!" said uncle. "We'll begin with Sid." So Sid began.

"The fishing-boat made me think of fishermen," he said. "And fishermen made me think of Old Jack. And Old Jack made me think of smugglers. And smugglers made me think of adventures. And adventures made me think of 'Treasure Island.' And 'Treasure Island' made me think of the Bermudas. And the Bermudas made me think of the lovely flowers that grow there. And the flowers made me think of Mother, because she loves them so. And—and that's about as far as I got."

"Good, Sid! You started from the fishing-boat and reached mother."

"I think you will generally find in 'Thoughts' that, somehow or other, what you are thinking about most of the time will come creeping in when you are playing. That is why Sid, who thinks about Mother so often, found that the fishing-boat led him to her."

"It's a jolly game," said the children. "It is a jolly game. Try it and see. The more there are playing, the more interesting it is; it is surprising to notice the different roads different minds take."

STORIES TOLD IN THE MIDDLE AGES

LITTLE TALES FROM A BOOK THAT SHAKESPEARE READ

The most famous story-book of the Middle Ages was a book written in Latin, called the "Gesta Romanorum," which means, "The Exploits of the Romans." The book received this name because many of the stories were told about real or imaginary emperors of Rome. There are about two hundred stories altogether, and most of them are weak in incident and dramatic power; but it was in the "Gesta Romanorum" that Chaucer, Shakespeare, and other famous poets found many of their plots. Here are some of the more interesting stories.

THE SON WHO DID HIS DUTY

A CERTAIN soldier went on a long journey, leaving his wife and son at home. In a distant land the soldier was made a prisoner, and kept in close confinement, but he was able to send a message to his wife and son telling them of his fate, and asking them to do all they possibly could to collect a sum of money to pay for his release.

The wife was so distressed at the sad news, and wept so much, that she became blind; and the son was then in great trouble, for he knew not what to do. He was anxious to fly to his father's help, but at the same time he could not bear the thought of leaving his blind mother alone while he was away.

After thinking over the matter for some time, he at last determined to go to release his father; but first of all he made careful arrangements for his mother to live among friends, and be properly cared for during his absence. Then he traveled to his imprisoned father, obtained his release, and the family were once again united and happy, and the mother gradually recovered her sight.

THE DOGS THAT BECAME FRIENDS

THERE was a king who had two greyhounds, and these were kept chained up at some distance from one another. But directly they were let loose they flew at each other, and began to fight most fiercely. The king consulted one of his wise men as to what could be done to make the dogs live together as friends.

"Take them into the forest," said the wise man, "and when you see a fierce wolf or a wild boar, let one of the dogs loose. The wild animal will attack it. But just as it is being overcome, let loose the other dog, which will fly at the boar or wolf, and the two dogs together will be

more than a match for the wild animal." The king did this. A wolf appeared, and one dog was let loose. When its strength had nearly failed, the other was let loose, and the fierce wolf was slain. The first dog was so grateful to its companion for saving its life that ever after the two animals were faithful friends.

ALEXANDER AND THE PIRATE

A SEAMAN named Diomedes for a long time sailed the seas in a galley, attacking shipping, plundering cargoes, and sinking vessels. At last he was captured and brought before Alexander the Great, who asked angrily how he, a nameless adventurer, dared to trouble the seas as he had done.

"Sire," said he, "ask rather how you dare to trouble the earth. I am master of only a single galley, and do but little harm, while you are master of great fleets, and carry desolation and war. Yet I am called a robber, and you are a king and conqueror. Did fortune but change, and I became more successful while you became less successful, our positions might be reversed."

This argument so struck the king that he made the pirate a wealthy prince, on condition that he should give up his life of robbery and become an honest man.

THE CONQUEROR'S TRIUMPH

A CERTAIN king, after a great victory, appointed three honors for his successful general. He decreed that the victor should be greeted with loud cheers, that he should enter the capital in a triumphal car drawn by four white horses, and that the captives should follow the conqueror's chariot, bound hand and foot.

The general was delighted, but when the time came for the honors to be enjoyed, he found that the emperor in order to keep him humble amid success, had appointed also three annoyances which would accompany the honors.

First of all, a slave rode by his side in the triumphal chariot, to remind him that even the poorest and least of mankind could attain to a position such as his; in the second place, the slave struck him a blow whenever the people cheered, so that his pride might be checked; and, in the third place, the

people were allowed free licence to shout the most insulting remarks while the victor enjoyed his triumph, so that he might be reminded of his weak points.

THE GUESTS AT THE FEAST

A GREAT king made a feast, and invited everyone to it. He sent out messengers to all the cities and towns in his kingdom, asking the people to come, and promising both food and wealth.

In one town there was a strong, robust man, who, unfortunately, was blind; and he loudly bemoaned the fact that

HOWLEGLASS, THE MERRY JESTER

The "History of Howleglass" is a famous German book of stories which was written in the early 16th century, and was very popular in England in the reign of Queen Elizabeth. Howleglass is a wily peasant who travels about a great deal, and wherever he goes he plays pranks that make people very angry at first, but afterwards cause them amusement. The following are some of his adventures:

THE DINNER AT THE CASTLE

HOWLEGLASS at one time enlisted in the service of the Count of Ambal, whose castle was surrounded by enemies. Howleglass was placed in the watch-tower, and told to keep a sharp look-out and to blow a horn if he saw the enemy approaching.

Shortly afterwards he heard the count and his chief officers go into the great hall to dinner, and the smell of the dishes was too much for Howleglass. So he gave a great blast on his horn, and while the count and all his men ran off in great alarm to their posts to withstand the enemy. Howleglass rushed down and ate his fill of the victuals provided.

THE THREE GREAT QUESTIONS

ARRIVING at Prague, Howleglass posted a notice on the doors of the churches that he would answer any questions that might be asked of him, however difficult they might be. He was taken to the university and questioned by the rector before all the students, who had gathered to hear the visitor.

"How much water is there in the sea?" asked the rector.

"Stop the tides," said Howleglass, "and I will measure it for you."

The rector said he was unable to do that, and asked a second question.

"How many days have passed away since Adam was alive?" said he.

"Seven," answered Howleglass with-

his affliction would prevent him from accepting the king's invitation. But presently he heard that in the same town was a lame man, who was also grieving that he would be unable to go to the feast.

The blind man and the lame man, therefore, came to an arrangement by which the blind man would carry the lame man to the feast, the lame man directing him. So the man who had sight but could not walk guided the man who could walk but could not see, and the two went together to the king's feast.

out hesitation, "for when seven have passed, seven begin again, and so it goes on to the end of time."

"Where is the centre of the world?" asked the rector.

"Why, this house, to be sure," replied Howleglass. "Measure the world with a long cord and you will find I am right to an inch."

"How far is it from earth to heaven?" said the rector.

"Very near indeed," answered Howleglass, "for when we pray ever so low on earth, it is surely heard in heaven."

"But how large is heaven?" questioned the rector.

"Just twenty thousand leagues," replied Howleglass; "and if you doubt me, go and measure it, including the sun and moon and stars."

At this point the rector had to own that he could ask no question to which Howleglass had not an excellent answer.

THE WONDERFUL HORSE

HOWLEGLASS, on his travels, once came to the city of Halberstadt, and lodged at the best inn he could find. Soon his money was exhausted, and in order to get more he asked the town-crier to advertize a wonderful show that would be open to the people on the following day.

"Come," he said, "and see the strangest horse that ever lived. Its tail is where its head should be."

The people flocked to see this strange animal, but on entering the stable where it was kept they found an ordinary horse with its tail tied fast to the manger.

The folk could not help laughing at the way they had been hoaxed, and Howleglass made them promise as they left that they would not reveal the secret to those who had yet to come in.

STORIES TOLD IN THE OLD ENGLISH SCHOOLS

One of the first books on education ever written and printed in English was Sir Thomas Elyot's "Governour," published in 1531. It is a remarkable book, for its enlightened views are worthy of the twentieth century; and much that is done in the education of children to-day was first suggested by its author. The book is full of interesting stories which used to be told in old English schools to illustrate lessons. Some of these stories are given here.

THE MASTER AND HIS SCHOLARS

WHEN Dionysius, King of Sicily, was exiled by his people, he went to Italy and set up a school for boys, to whom he taught grammar and other subjects. His enemies laughed at him for this, declaring that it was quite beneath the dignity of one who had occupied a throne to keep a school. But he replied that, though he had been turned out of Sicily, he was still a king, for he had authority over his scholars.

His enemies then asked him what good Plato's philosophy was to him in his trouble, for he had studied it deeply.

"Ah," replied he, "it enables me to bear misfortune with patience!"

So moved were his former subjects by his fortitude that they recalled him to the throne—a dignity which he would probably never have regained by the sword.

THE TWO FRIENDS

ORESTES and Pilades were two youths who were remarkably alike in appearance, and remarkably fond of each other. One day Orestes was seized by command of a tyrant, who hated him deeply, and who had determined to put him to death. But Pilades accompanied his friend into the presence of the tyrant, and, in order to save the life of Orestes, loudly declared that he was the man the tyrant sought.

The real Orestes, however, maintained that he was the man who was wanted, and so perplexed was the tyrant that he knew not which of the two to condemn. At last, when the youths continued striving to receive condemnation in order that each might save the other, the tyrant's heart was softened, and he set them free.

THE CONQUEROR AND THE ARTIST

ALEXANDER THE GREAT, who conquered nearly all the world, one day went into the studio of an artist, and, while watching the man paint, spoke of drawing, and color, and other subjects about which he knew little or nothing.

At last the artist turned round, with a smile, and said to the king:

"Do you see, noble prince, how even the boy who is mixing my colors is laughing at you?"

Instead of getting angry the king accepted the rebuke, and ceased to talk glibly about what he did not understand.

THE TRAITOR WHO BECAME LOYAL

IT was once reported to King Philip, father of Alexander the Great, that a certain captain had been plotting against him, and the king was urged to have the man imprisoned. But Philip declined, in spite of the continued warnings of his courtiers and friends.

"If any part of my body was sick," said he, "should I cut it off and cast it away? Should I not rather do all I possibly could to heal it?"

He thereupon invited the traitorous captain to the palace, loaded him with gifts and honors, and in this way made him ashamed of his treason. The captain afterwards became one of the most loyal and most loving subjects of the king.

THE KING WHO WAS LOVED

CRÆSUS, the rich king, was captured by Cyrus, King of Persia, and one day, after seeing the liberality of Cyrus, he said:

"Surely if you give away like this you must become very poor, whereas if you keep your wealth you would soon have great riches."

"How much do you suppose I should have now," asked Cyrus, "if, during all my reign, I had kept everything and given nothing?"

Cræsus named an immense sum.

"Well," said Cyrus, "I will send round to my friends and subjects, and tell them that I need money for some object, and you shall see the result."

After the messengers of Cyrus had been round, the king took Cræsus to see the gifts they had sent. Cræsus was amazed, for there stood a great heap of gold, of far greater value than the sum he had named as being what Cyrus might have saved had he been a miser.

"If I had hoarded and guarded my wealth," said Cyrus, "I should be envied and hated by my people; whereas I am loved and trusted by my people, and can in a moment have more gold than ever I could have saved in many years."

THE SOLDIER AND HIS JUDGE

ONCE when King Philip, father of Alexander the Great, was trying a prisoner, he fell asleep; and then, waking suddenly, he at once gave judgment against him. But the soldier cried out:

"King Philip, I appeal against your sentence!"

"To whom do you appeal?" said the king angrily.

"I appeal from Philip asleep to Philip awake," answered the soldier, facing his judge nobly.

The king was impressed by this reply, and, feeling the justice of the man's appeal, he went thoroughly into the case, found that he had greatly wronged the soldier, and at once had him set free.

THE BATTLE WITH THE LION

AT one time, when there was no battle in progress, Alexander the Great became tired of inactivity, and, ordering a fierce lion to be brought into his presence, he fought it single-handed, and, after a terrible struggle, finally slew it.

A courtier, who disapproved of the king risking his life thus needlessly, being asked his opinion of the battle, replied in these words of great wisdom:

THE FARMER

A POOR farmer by the banks of the Nile had a good dog, which had to go hungry for some days because the farmer had no food in the house. There was a village across the river, where any dog that knew how to forage could manage to pick up a living. The farmer's dog was well acquainted with the place, as he had often gone there with his master in a boat. But swimming across the great stretch of water was dangerous, as the river was full of fierce crocodiles.

Being pressed by hunger, however, the dog finally risked it. He arrived at the village, but on the way he had two such narrow escapes that, for some time, he was afraid to swim back. Meanwhile, he found as much food as he wanted, and grew plump and fairly happy.

But being of an affectionate nature, the dog was troubled by his separation from his master, and his sadness made him as miserable as hunger had made him before. At last he resolved to return. But how could he get back safely?

"I wish with all my soul that your Majesty might fight with a lion for some great empire!"

By this answer the courtier, while praising the king's bravery, at the same time hinted that only for a great cause, and not for mere pride of victory, should he thus risk his precious life, which was of such importance to his people.

HOW ALEXANDER CROSSED THE RIVER

WHEN Alexander the Great was going to war against the Indian King Porus, he and his army had to cross a wide river. The horsemen went in, and the animals were soon up to their necks, so that it was impossible for the foot-soldiers to cross the river by a ford.

The men could not swim, and were afraid to go into the water. Seeing this, Alexander, who himself could not swim, wrung his hands, exclaiming:

"Oh, most unhappy that I am, never to have learned to swim!"

Then, seizing a shield from a soldier and throwing it into the river, he stepped upon it, and, balancing himself with his spear, crossed to the other side, using the shield as a raft. This encouraged the foot-soldiers, and in one way and another they all managed to cross the river.

AND HIS DOG

Sometimes a boat crossed the river, and he would then try to get into it. But the boatmen would not have that, and one day the dog stood howling by the riverside at a departing boat, when the crocodiles, attracted by his cries, came swimming to the spot, thinking, no doubt, that they could easily take him.

This seems to have suggested to the dog a clever plan of escape. As night began to fall he again came to the riverside, and stood howling with such a show of anguish that the crocodiles crowded once more to the spot, hoping to find an easy prey. But while they were peering about, the dog was tearing along the bushes by the bank.

Two hundred yards away he silently slipped into the river, and, having now a clear way before him, safe from the crocodiles, he swiftly swam back to his master's house. There he received a loving welcome and a good supper, for the farmer had now reaped and sold his corn, and he was very glad to find that his dog had not forgotten him.

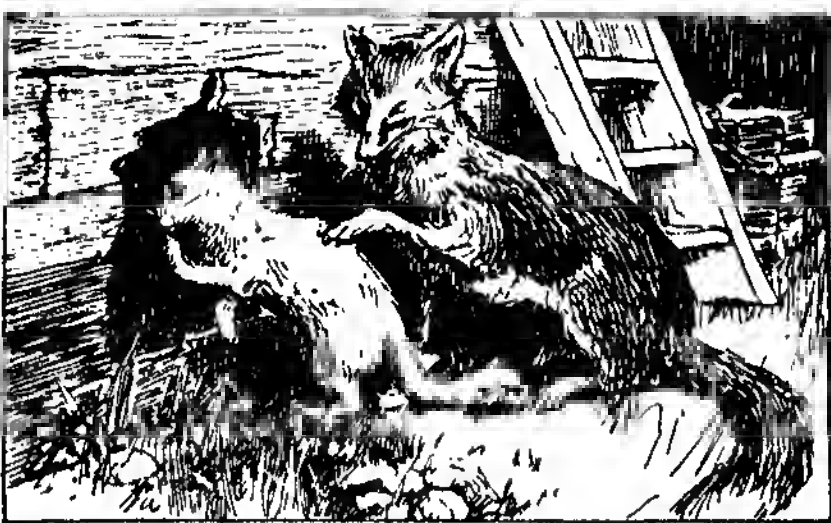
THE NEXT STORIES ARE ON PAGE 568.

THE ADVENTURES OF REYNARD THE FOX

Nobody knows who wrote "The Adventures of Reynard the Fox." They are about a thousand years old, and are found among the ancient literature of many countries. Reynard is an artful knave, who deserves to be punished for all his evil deeds, but somehow manages to escape every time. The stories were written as parables—that is to say, as stories with an inner meaning—and they were meant to point out the evils of rulers and priests in the days when men did not dare to write openly of such things.

REYNARD IS SUMMONED TO COURT

SIR TIBERT the Cat was sent by King Lion to summon Reynard the Fox to appear at court, there to answer for all his offences. At first the



REYNARD SHOWED SIR TIBERT THE HOLE

cat did not want to go for fear that some evil should overtake him, but at last he was persuaded, and he set out.

When he arrived at Reynard's castle, the fox promised to return with him to the court. "But," said the fox, "you must remain for the night, and to-morrow we will travel together." Sir Tibert agreed to this. Then the fox began to lay the table for a meal, but all he could provide was honey.

"That is food I care nothing about," said the cat. "Have you not a mouse?"

"Oh," replied Reynard, "come with me to the priest's barn, it is full of mice!"

So the two set out, and presently they came to the barn.

"There is the entrance," said the fox, pointing to the hole by which he had himself entered the night before and stolen a good fat hen.

Now, the priest had set a trap near the hole, inside the barn, and when Sir Tibert crept in he was caught in the trap. His mewling soon brought out the priest, who, supposing him to be Reynard, began striking out with a stick. Thereupon Sir Tibert seized the priest's leg with his teeth. This gave the worthy man some-

thing to think about, and while he and his wife were attending to the wound, Sir Tibert bit through the cord that held him and made off. All this time Reynard was hiding in the bushes close by, and laughing most heartily.

REYNARD TELLS OF A TREASURE

WHEN at last Reynard the Fox was brought to the court, so many witnesses appeared against him that he was sentenced to death. Just before his execution, he asked that he might make a confession of all his misdeeds, for he now felt very penitent; and in the course of this confession he said something that made the king listen very carefully.

"My lord the king," he declared, "in Flanders there is a dense wood by a river, and in it I have hidden a great treasure—money, jewels, precious stones—and I want you to get this treasure; then perhaps you will remember your devoted servant, Reynard."

The animals who had accused the fox now began to feel very nervous, for King Lion, having learned exactly where the treasure was supposed to be hidden, forgave the fox and made him a noble.

"Hear, all you knights and gentlemen," said the king. "Sir Reynard is now one of the chief officers of my court, and I do charge you, upon pain of death, to show him the greatest reverence at all times and in all places." Reynard



"WHERE IS KAYWARD?" ASKED BELLIN then asked permission to make a pilgrimage to Rome, and he set out, accompanied by his enemies, the hare and the ram, who were now his humble, though unwilling, attendants.

Soon the party arrived at Reynard's house, and the fox asked Bellin the Ram to keep guard outside, while Kayward the Hare went into the house to see Reynard's meeting with his family.

Once inside, it was not long before the hare was killed and eaten.

Then the fox came out, and giving a bag to the ram, asked him to take it to the king.

"Where is Kayward?" asked Bellin.

"Oh, he is talking with his aunt, and wants you to go on, as he will soon overtake you."

The ram carried the bag to the king.

"Sire," said he, "this is a present from Sir Reynard, who rested for a few hours at his castle before going on to Rome."

"Open the bag," said the king, "and show the gift of the noble Sir Reynard."

The bag was opened, and out fell the head of poor Kayward the Hare.

"Alas!" said the king, "unhappy monarch that I am ever to have given credit to a sly and traitorous fox."

REYNARD AGAIN ESCAPES

THE day after Bellin the Ram had brought the head of Kayward the Hare to the king from Reynard, Laprel the Coney came into court crying:

"O king! deliver your subjects from the wicked attacks of Reynard the Fox. I was passing his castle yesterday, and he came out telling his beads so devoutly that, instead of hastening away, I saluted him very humbly, and immediately he gave me such a terrible blow with his paw that I was nearly killed."



THE ROOK BENT TO SEE IF HE WAS BREATHING

At this moment in came Corbant the Rook in a great state of excitement.

"Oh, my lord, hear me!" he cried. "I was on the common this morning, when I saw Reynard the Fox lying apparently dead and stiff on his back. My wife went and put her head to his mouth to see whether he was breathing, when suddenly the wicked creature snapped at her and bit her head right off. Then he made a dash for me, and I only just managed to escape by mounting

into the air, and from my place above I saw him eat up my dearly beloved wife."

The king was furious. Reynard was brought before him and sentenced to death once more, but again escaped by talking of the hidden treasure and by promising to go in search of it himself for the king.

REYNARD'S BATTLE WITH THE WOLF

AFTER King Lion had pardoned Reynard for the second time, Isengrim the Wolf made all kinds of accusations against him, and it was decided that the two animals should fight a duel to decide which of them was in the right.

The fox knew that it was only by trickery he could win, and he sought



REYNARD SMOTE THE WOLF WITH HIS TAIL the aid of a friend of his, the ape's wife.

"Shave all the hair off your body, from head to tail," said she, "and cover yourself with oil."

This Sir Reynard did, and then in the presence of the king the fight began.

Every time that Isengrim tried to seize Reynard, the fox slipped away, as his oily body was too slippery for the wolf to get a grip. Then the fox would smite his enemy in the face with his tail, and before he had recovered from the blow he would throw up in his eyes clouds of dust. This nearly blinded the wolf, and gave the fox an opportunity to chastise him. So the fight went on, until the wolf got the fox down and had one of Reynard's paws in his mouth.

Reynard was now in sore straits, but with the other paw he pinched the wolf, and when Isengrim opened his mouth to howl, Reynard snatched out his paw. Then the wolf fainted, and Reynard, laughing triumphantly, dragged him round the arena by his hind legs.

The king now pardoned the fox for everything he had ever done, and made him Lord Chancellor of his kingdom, ordering that all the other creatures should pay him the greatest honor.

The Book of NATURE



THE RABBIT AT HOME

HOMES NOT MADE WITH HANDS STRANGE DWELLING-PLACES OF ANIMALS

SUPPOSING that all living creatures were gifted with the power of speech, what song might we expect them to sing? If we can fancy such an impossible thing happening at all, may we not imagine that they would sing, as their favorite song, that song which is the favorite of every son and daughter of our own country, "Home Sweet Home"? To many species of animals, their homes are very dear, and they will endure the greatest hardships to defend them.

We all know how domesticated animals love their homes. The horse, the dog, and the cat would sing the song with all their might. A horse never forgets the place which has once been its home. One intelligent pony, revisiting a town in which it had not been for eight years, made a dash for its old stable the moment it saw the house at which its master had formerly lived.

A dog will travel hundreds of miles on foot to return to the spot to which the kindness of human beings has accustomed it. A cat so dearly loves its home that it will even remain behind in an empty house when the family goes. And think what wonders of flight the homing pigeon performs in order to return to the loft in which

CONTINUED FROM 5512



some kind boy or girl has made it a home. What, however, of the animals that we have not tamed? They have just as warm an affection for their homes, the dwellings which they have made for themselves and for their little ones. There is a good old English expression, "house-proud." A woman who is fond of her home, and likes to see it pretty and comfortable for everybody in it, is house-proud. Well, many of the animals are house-proud, too, and devote great labor and skill to the making of the places in which they live and rear their babies.

Seeing that the apes and monkeys rank next in the scale of life to man, we might expect them to show skill next to man's in the making of their homes. But they do not. The larger apes are content with a simple lodging in the trees of the great forest in which they live; and none of the monkeys ever makes any pretence at building a dwelling for itself. Are we to be disappointed at this? Not at all. As we all know, man himself, before he became civilized, was content with the rudest dwelling. A rough cave served, until wolves or hyenas came to quarrel over his bones. Man of the very early ages, though he was far superior

in intellect to the highest of the animals, never had any home half so snug as that of the mole or beaver. Therefore, let us



THE INSIDE OF A MOLE-HILL

not think slightingly of the apes and the monkeys because they do not build elaborate dwellings for themselves.

The fact is that for the wonders of Nature's architects we have to go to the smaller birds and animals, and to the insects. These are the little workers which make us realize how very humbly we ought to view the works of men.

THE WONDERFUL HOME OF THE LITTLE BROWN MOLE

Men with their wonderful brains have invented tools for every sort of work, but for all the wonders performed in the animal world there is not a single tool. We need not step beyond our own garden to see the ants at work; we have only to walk to the nearest meadow to find signs of the labor of the mole, even if the busy and impudent



YOUNG MOLES IN THEIR NESTS

little gentleman does not actually venture upon our private property. Quite a little city under the ground is burrowed

by the mole. The mole-hills with which we are familiar are not part of the dwelling at all, so we need not dig down expecting to find Mr. and Mrs. Mole and family at the bottom of one. The mole-hills are merely shafts which the mole has thrown up in order to get rid of the loose soil which he has scraped away in making one of his tunnels. The actual home is not so easily found. It is hidden, as a rule, under a tree or large shrub, or in a bank. If we can get a peep inside that, then the mystery of the mole's dwelling is at once made plain.

The main hall of the dwelling is a lofty, sphere-shaped apartment. Around the hall run two galleries, one level with the ceiling, the other higher still. The only way into the great hall is from the upper gallery, from which three passages lead through the ceiling; but there are five short passages connecting the upper



gallery with the lower. Tunnels run in all directions from the home of the mole, but each one comes out into the lower gallery surrounding the hall, so that the mole, on arriving, must enter the lower gallery, run upstairs, as it were, to the upper gallery, then pop through one of the passages which lead into the hall.

This, however, is not the only part of the dwelling of the mole; there is a little house for the children. This is a rather large well-lined and padded chamber, made where two of the underground main roads or tunnels cross. We can see the reason for this; it affords the mother and her little ones ample chance of escape should danger threaten. The explanation of all the other passages round about the main hall is not so clear. We all understand that the height of the

HOMES NOT MADE WITH HANDS

hall is to give proper ventilation, for even under the ground the mole must have air. For the rest, it is not easy to see why such elaborate defences should be required. Ferrets and weasels are not likely to go along a mole's run, and there can be no other underground enemies, unless it be other moles. That idea suggests an explanation. Moles, when they are in love, are so terribly savage—male against male, of course—that, unless some such scheme of defence as we have been studying were made to keep out rivals, father and mother moles would never be able to bring up their families in peace. For, like male shrews, the moles fight until one is killed; and very often the victor is so badly injured in the battle that he, too, must die.

WHERE THE SHREW BUILDS HIS NEST

The shrew, tiny fellow that he is, is a great burrower, but not to be compared



THREE VERY YOUNG HARES IN THEIR NEST

with the mole. The shrew's abode is a simple nest placed at the end of a straight, long tunnel constructed just below the surface. This can be reached easily by any other shrew, but woe betide the intruder; he will certainly be killed if he be a shrew, unless he kill the shrew already in possession. There are connecting links between the shrews and the moles, and we find characteristics common to several different species of these animals.

There is a burrowing shrew in India, whose habits closely resemble those of our common moles. There is the desman, which is abundant in the wilds of the Russian Empire, and which once lived in England—an animal whose habits resemble those of our pretty little water shrews. But whereas our furry little

creature is content with a mere hole in the bank for his home, the desman makes himself a noble hall at the end of the burrow which leads from his stream.

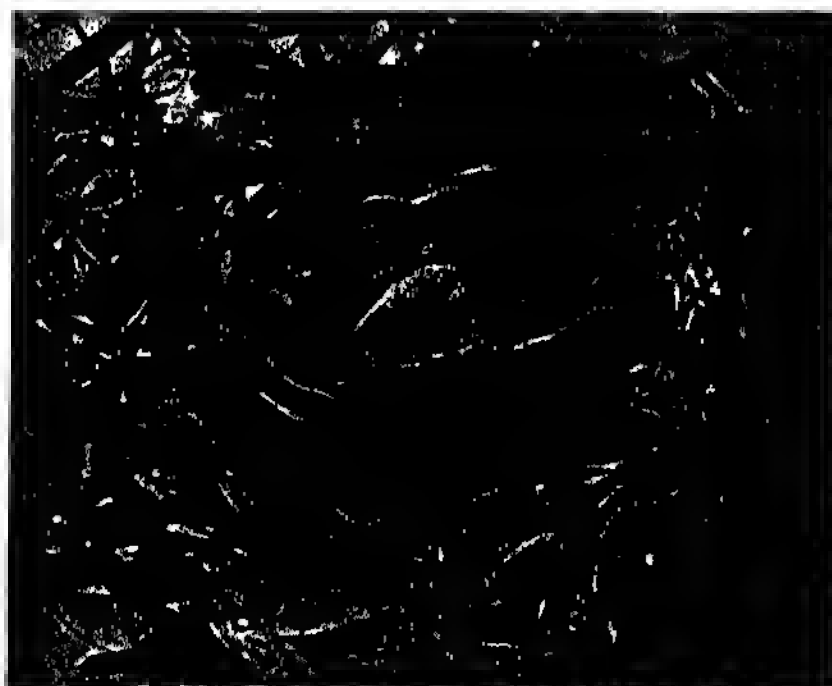


A HEDGEHOG FAMILY AT HOME

He passes the greater part of his time in the water, but when he comes out to take a nap in his home, his fur is as dry as the feathers of a duck. The fur of these swimming animals never really becomes wet; air collects about each separate hair, and the animal swims in what is practically an envelope of air.

THE KING AMONG FOUR-FOOTED BUILDERS

Of course, the king of workmen among the animals whose life is divided between the water and the land is the beaver. He must have water in which to swim; he must have a snug, dry home for the night. He comes to a stream which, while of sufficient depth at the time, may in dry weather become too low. So he sets to work, and with his powerful teeth gnaws at the trunks of trees until the



A NEST OF YOUNG SHREW MICE

latter fall, then cuts them up into logs; and with these, and with mud and stones and twigs and all manner of vegetation,

builds a sort of wall or dam, as we call it, across the stream. This causes the water to collect at this spot until there is a sufficient depth to flow over the top of the dam. There will always be water there, unless the stream above the dam actually runs dry. The beaver may now make his home, satisfied that there will be at his door the constant stream which he needs. The house which the beaver builds is a masterpiece of skill. It is built of mud, into which are forced branches of trees, and the whole is beaten so solid that, when the frosts of winter come, the lodge, as it is called, is as hard as iron.

The dwelling is about seven feet in diameter, and three feet high. Inside, all is snug and warm, the beds being arranged round the walls, so that father and mother beaver and the family can all be accommodated until the time comes for the little ones to go out into the world to make homes for themselves. Two passages lead from the lodge into the water. One of these is fairly high up, but opens out below the level of the water. The other opens out at a lower point, so that, should the water be frozen at the surface, the beaver can get out by the lower one to reach the store of bark which it has hidden to be its food supply in winter.

The labors of the beaver are really of an almost unbelievable character, so extensive, so thorough, and so wonderful in design and execution are they; but we must not exhaust our admiration here, for there is another little creature, the web-footed mole, who, though he is web-footed, is not a swimmer, but a landsman all his days, and a miner above all else. This mole makes a home underground which some of the friends of "Alice in Wonderland" might envy. The marvel of it is, however, the pace at which this creature works. A reliable observer tells us that he has seen a passage nearly a hundred yards in length made by one of these moles in a single night when the soil has been rendered soft by rain. Now, what does that amount of work mean to a mole? It means this: that if a man were to perform a task equal in proportion to his size he would have to bore in one night a tunnel, big enough to admit his body, thirty-seven miles long! Let us remember that, when we think that as human beings we do wonderful works.

THE POOR HABITATION OF THE KINGLY OTTER

With the beaver in mind, we might expect the otter, a king of the water and a fairly nimble animal on land, to be clever enough to make himself a nice hole in the banks of the rivers which he frequents. But he is like the early men—content with ready-made refuges, and these are in or near the river-bank. These he may scrape and shape according to his liking, but it is not known that the otter ever sets out and makes a home for himself where there is not some natural retreat already in existence.

The weasels are specially shaped for making their way in narrow, twisting passages underground, but they do not trouble to make homes of this character; they seek shelter above ground. The weasels must be content to share the reflected glory springing from the feats of the big man of their family, the badger. The European badger, especially, is a miner of rare ability, scooping out long, winding passages leading to his underground hall, his nursery, and other apartments, which are fashioned upon the most approved plan with regard to ventilation. This is secured by his making seven or eight passages, opening thirty paces apart. Each of these passages leaves open a way of escape in case of attack upon the fortress, but each also carries sweet air to the home.

THE HOME OF THE WILY FOX

Men who know the European fox only as an animal which they hunt would scarcely think of looking for their prey in the hole of a badger, but Master Reynard is sometimes found there. It is not because the fox cannot dig a home for himself that he has to seek the shelter of the badger's home. He is cunning enough to turn the badger out of his home, and make the place his own. He enters the badger's house, and the big weasel, knowing that he has nothing to fear, permits the intrusion. But while the badger is a very cleanly animal, the fox is not; at any rate, he is not when he takes up his home under the roof of his friend, the badger. So the badger, unable to tolerate the vexatious presence of the uncleanly fox, goes off and makes a new home, leaving the fox in possession.

The badger's is not the only home which the fox takes, as the poor rabbit

THE LITTLE DOGS THAT BUILD A TOWN



The pretty little prairie marmot is called the prairie dog because of its yelping, that sounds like the bark of a dog. It is found in colonies, and burrows tunnels in the ground. Thousands of these homes, which are deep down, are burrowed close together, so that the ground is rendered unsafe for horses. Over the burrows are mounds of earth, and the ground above a colony of prairie dogs resembles a town of miniature huts.

knows to his cost. The European wild rabbit is a splendid excavator. He sinks a steep, sloping shaft into the ground, then, having gone some distance down and forward, burrows in an upward direction, and at the top of this rising shaft makes a big chamber for himself, wife, and family. Sometimes a fox, following a rabbit home, digs his way into the burrow, eats up the poor little rabbit, then, finding the burrow warm and nice, settles there himself.

WHERE B'ERER RABBIT MAKES HIS DWELLING

The simple shaft of the rabbit of which

fox is more industrious, as it needs to be, in the fearful cold of the winter which it has to endure. To make the best of matters, Arctic foxes collect in colonies of from thirty to forty, and dig deep burrows in the earth, all the burrows being close together, and in these they defy the cold. But each fox has his own suite of apartments. He digs a main tunnel, with a set of rooms and a number of passages at the bottom, and no fox penetrates the estate of his neighbor.

HOW THE MARMOT KEEPS HIS FAMILY WARM

Smaller animals work quite as hard as



THE STRANGE LITTLE DUCKBILL PLATYPUS IN ITS UNDERGROUND HOME

we have been thinking is not all that this animal makes. They often conceal the entrances to their homes and excavate a tunnel, pierced by scores of little openings. Behind this screen are the openings to the rabbits' castles in the soil. At any alarm, the rabbits bolt to the tunnel, enter by one of the little doorways, then turn to right or left, and gain their homes without the whereabouts of their retreat being discovered.

The fox we have been discussing is the English red fox, but we Americans have a grey fox, which makes a snug home in the stump of an old tree. The Arctic

fox. The marmot is a little giant of industry, and makes two homes every year. He goes up the Alps in the summer, and there makes his summer dwelling, which serves for nightly shelter and also for a refuge in time of bad weather. When the early snows of winter come, down the mountains troop the marmots, bringing their little ones with them. When they reach the quarters in which they are to pass the winter, they work in parties of from fifteen to twenty, digging a long tunnel in the earth, and at the end of that a lofty, circular room. They carry in a large

quantity of grass for bedding, blocking the entrance to the home, then go snugly off to sleep for the winter. Other species of marmots are content with one residence for winter and summer.

The biggest marmot colonies are those in which the prairie marmots, or prairie dogs, as they are sometimes called, reside. Their cleverly-made homes are so numerous that they often cover as much as 200 acres of ground. They make excellent tunnels and chambers, and the earth that they excavate remains at the entrance; or, rather, we should say that a dozen entrances to as many burrows are grouped round these mounds, upon which sentinels watching for an enemy take their stand, and sound a sharp "tweet, tweet!" at the first sign of alarm, sending the whole colony racing down their tunnels.

THE SQUIRREL MAKES HIS HOME IN A TREE

In our own woods we may find a splendid little builder in our own pretty squirrel. He does not go underground, but makes a nest which a bird might envy, either in a hollow of some tree-trunk, or in a fork of the branches, high up out of danger's way. First he makes a strong flooring and sides, and roofs these over with a little dome, all being of twigs, so closely woven that the rain and wind, which he hates, cannot enter. The inside he lines with the softest moss, and the little home is as snug as one could imagine. But he must have air, so he leaves open a little doorway, by which he enters from below, and has another opening on the opposite side by which he can escape should an enemy seek to attack his house. If rain or wind assails the house, all that he has to do is to plug up the two openings with moss, and there he is, as neatly housed as any little brownie in the story-books.

Three more burrowers we must notice, the echidna and the duckbill, or duck-billed platypus, and the jerboa. The first two of these animals lay eggs, and belong to the strange families of Australasia, where the animals are so different from the animals of the rest of the world. The echidna, which is an ant-eater, makes his home underground without difficulty, thanks to the enormous power which he possesses in his long and sharp claws. The duckbill, however, though his home is on land,

gets his living in the water. Long experience of the natives has taught him to be very cautious, and he selects for his home a quiet stream opening out into reedy, solitary pools, in which he can find his food of vegetable matter, shell-fish, worms, and so forth.

In order that he may gain the water without attracting attention, the duckbill enters from a tunnel which runs down from his home below the surface of the pool. This tunnel winds up through the soil for as much as fifty feet, and leads to a big, well-shaped chamber, which is lined with grass and is cosy and secure. In order to let in air to the dwelling, the duckbill drives a second tunnel from the sleeping apartment to the surface of the soil, making the opening in the midst of thick vegetation where it cannot be discovered, except by the marvelous eyes of the Australian native. The duckbill has in this second tunnel a way of escape, should he be attacked from the first tunnel; but he will always take to the water if he can, for with his webbed feet he makes but poor progress on land.

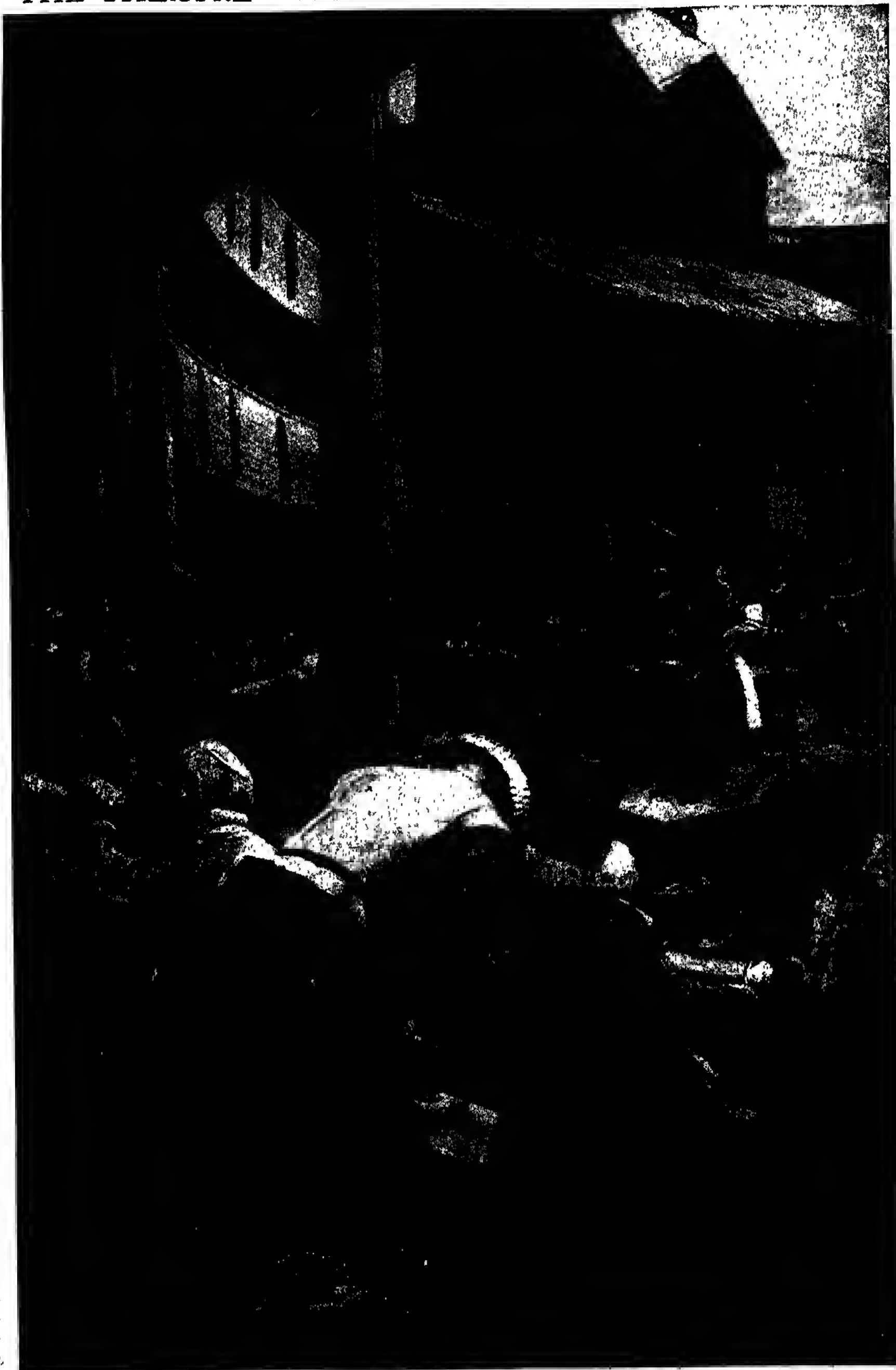
THE JERBOA'S HOUSE IN A MAZE

It is no easy matter for an intruder to force its way into the home of the little jerboa which is called the kangaroo rat. This little animal makes several entrances to his castle. Each entrance leads into a number of branching alleys, but only one leads toward the nest. Most of the others are blind alleys. Every entrance has a passage to some other entrance, and though each entrance has a passage to the nest it is hard to find. The jerboa is a wise little animal, and each time he goes in or out, he closes up the passage to his nest. Inside the earthen door, the hallway takes a turn, and leads the way into a beautiful little chamber. It is as pretty as the nest of a humming-bird, and is padded with fine grass, silk from weeds, and soft downy feathers. The jerboa is a provident little fellow too, and another passage leads from the nest down to a storeroom which he fills with the seeds of sunflowers to feed him and his family when the winter comes.

This glance at a few of the clever home-builders of the animal world convinces us that in their way these little builders are not to be surpassed among men.

THE NEXT STORY OF NATURE IS ON PAGE 566

THE THEATRE WHERE SHAKESPEARE SAW HIS PLAYS



A performance in the Globe Theatre, Southwark, where Shakespeare himself acted.

The Book of MEN & WOMEN



A scene from a Shakespeare play: Meeting-place of the Jews in "The Merchant of Venice."

WILLIAM SHAKESPEARE THE HERO OF THE WORLD OF BOOKS

WILLIAM SHAKESPEARE, acknowledged by all nations as the most wonderful genius that ever, in any age or land, wrote books, was born in the heart of England, April, 1564, at Stratford-on-Avon, one of the sweetest places in the world. His family were plain country people. John Shakespeare, his father, son of a farmer, was a respected tradesman who rose to be alderman and high bailiff of Stratford; and his mother, Mary Arden before marriage, was a well-to-do farmer's daughter.

The boyhood of Shakespeare was, in all probability, passed like that of any other tradesman's son of the time, with the healthy sports of a rural town for pastime, and the local grammar school as his home of learning. He had an excellent teacher at the grammar school, Master Simon Hunt. The boy had to be up betimes to take his place in the old grammar school, which is still standing, though considerably altered; for lessons began at six o'clock in the morning in the summer weather, as daylight was precious in those days, when such wonders as gas and electric light were still undreamed of. But he had not far to go "with his satchel and shining morning face, creeping like snail, unwillingly to school,"

CONTINUED FROM 5489



as it was less than ten minutes' easy walk from his father's house in Henley Street to the local grammar school.

We can see him in fancy, dressed just like the other boys of the town, in a long, loose cloak hanging nearly to his ankles, with short, wide sleeves, through which his arms were thrust. But his cloak would not altogether hide the more picturesque part of his attire, which consisted of a short, well-fitting jerkin, his puffed hose sticking out from beneath the waist to the thighs, above his long, dark-colored stockings. His shoes were strange affairs that bulged somewhat at the toes, being tied with long ends of their own material, and the satchel wherein he carried his books was the only thing about him that a schoolboy of our time might wear without attracting the attention of every passer-by.

As for the boy himself, we know him for a bright-faced lad with high forehead and dark, abundant hair, his eyes of a light hazel color, full of mischief and healthy merriment. Whether he was a diligent scholar, the pride of Master Hunt, or something of a trial to that worthy teacher, we do not know; but the poems which he wrote in after life are so full of varied learn-

ing that we cannot but suppose the headmaster, who was famous for his teaching of Latin, found young Will Shakespeare one of his brightest and aptest pupils.

The boy, always a poet at heart, received at the grammar school an education which enabled him to glean, in after life, from all the harvests of the world's learning, though he was not an exact scholar. He left school too early for that—probably when he was about thirteen.

What young Shakespeare did immediately after he left school is not certainly known. No doubt he helped his father, who was becoming less prosperous; and perhaps he had some experience in a lawyer's office, for later he showed a clear knowledge of the law and of legal ways, and no one can tell when he gained it if it were not during his youth.

Companies of players visited Stratford in those days. Not far away was Kenilworth, where gorgeous masques were arranged in honor of Queen Elizabeth when Shakespeare was about eleven; and at Coventry—a neighboring place—festivals of acting were held from time to time. It is clear, then, that Shakespeare, when a boy, knew something of the drama.

As a young man the poet seems to have been rather rash and headstrong. At any rate, when only eighteen he married Anne Hathaway, a farmer's daughter eight years older than himself, living at Shottery, a hamlet adjoining Stratford; and three or four years afterwards he found it convenient to leave his native district and seek his fortune in London. No written account of Shakespeare's departure from his home has been preserved, but the story is that he joined other wild spirits in a poaching expedition to Sir Thomas Lucy's park at Charlecote, was caught and punished, and then wrote such annoying verses about Sir Thomas that it became necessary for him to run away from that magistrate's anger. Certainly, many years after he caricatured Sir Thomas as Mr. Justice Shallow.

Of all the men who tramped wearily to London in the olden times, hoping to make their way in the world, none probably had a sadder heart than William Shakespeare. He had left behind him, in the place he loved, a wife and three children, a father sinking into poverty, a reputation for troublesomeness; and as yet he had not done anything to make people think well of him.

SHAKESPEARE'S TEN WONDERFUL YEARS

Ten years passed away, ten great years for Shakespeare, and then he returned to Stratford a comparatively rich man, admired by the greatest in the land, a favorite of a queen; re-established his family, and for use during his visits home bought the largest house in the town. How had it happened?

On reaching London young Shakespeare seems to have become connected quickly with the theatres, at first, according to tradition, as a minder of the horses on which some of the richer play-goers had arrived. It has been suggested that he organized a service for this purpose, taking loungers round the theatre into his employment. Before long he had been accepted as an actor, and next became busy rewriting unsatisfactory plays, or joining with others in composing new plays. A few years later his genius found expression as an original dramatist, though always working on borrowed materials, until he was admitted, even by the rivals who had been jealous of him, to be the first playwright and poet of his day.

He does not seem to have been a brilliant actor, and even when his own plays were acted he never had any important part to fill in them. Fortunately for the world, he was something far greater than the greatest actor that ever lived, and it is to the credit of the Londoners of his time that his series of great comedies and tragedies, which began, most likely, with "Love's Labour's Lost," and ended with "The Tempest," met with so hearty a reception that their author, who had also become part owner of the Globe Theatre, was a comparatively rich man in the year 1600.

WHAT A THEATRE WAS LIKE IN THE TIME OF SHAKESPEARE

The most successful years of his life came after 1600, when his popularity both as a dramatist and an actor was at its highest, and the success of the Globe Theatre and the Blackfriars Theatre, in which he also had a share, brought him a good income. The theatres of those days did not resemble the luxurious buildings of our time. Outwardly, they looked not unlike a sort of castle tower without a roof. Around the inside of the walls the seats were fixed in three galleries above each other, and from one side the

SHAKESPEARE IN ANNE HATHAWAY'S COTTAGE



SHAKESPEARE AT AGE OF 19 SITTING IN ANNE HATHAWAY'S COTTAGE AT STRATFORD



THE COTTAGE OF ANNE HATHAWAY, WHO BECAME SHAKESPEARE'S WIFE

stage was built out, occupying almost one half of the interior.

No scenery was used, and part of the audience sat in boxes behind and above the stage, and even at times on the stage itself, while the people in the arena or pit had to stand. Nor were there any actresses in Shakespeare's time. The female parts were all performed by boys or young men dressed like women, and thus the great dramatist, who conceived such sweet and noble women as Rosalind and Desdemona, never saw them embodied by actresses.

SHAKESPEARE LEAVES LONDON AND RETURNS TO HIS NATIVE TOWN

So successful was Shakespeare in the later days of his life in London, that his income as writer, actor and manager amounted to from \$15,000 to \$20,000 a year in the money of our day. He had a house near the Blackfriars Theatre, but his family still lived in Stratford. He was a man of good business ability, and as his wealth increased he purchased more and more property in his native town. About 1611, he retired there, and after some years of ease, died on April 23, 1616, when only fifty-two, and was buried in the chancel of the parish church.

And now into the quietness of the shaded parish church come, from all parts of the world, reverent pilgrims, who gaze with full hearts at the strange inscription on the slab of stone in the chancel floor under which rest the remains of the great hero of the world of books. A strange warning inscription it is, but perhaps necessary in the days when the bones of the dead were gathered after a while into the common charnel-house:

"Good friend, for Jesus' sake forbear
To dig the dust enclosed here;
Blest be the man that spares these stones,
And curst be he that moves my bones."

It is the homely rhyme of one who never guessed how sacred his grave would be to all the generations of men.

His verse might endure, but for himself



WILLIAM SHAKESPEARE AS A BOY

his last modest request craved only an unmolested tomb. There spoke the Stratford lad come home. But in the interval between his going and his coming great things had happened.

THE COUNTRY LAD WHO BELONGS TO ALL TIME

The true life of Shakespeare is in his books. Into them was put that which has taken captive the minds of men, and with one consent they have applied to the poet in his last resting-place his own beautiful words which he put into the mouths of Cymbeline's sons:

SHAKESPEARE IN TROUBLE & IN TRIUMPH



This picture, by Thomas Brooks, illustrates a well-known story of Shakespeare's youth. The poet is said to have been arrested for illegally hunting deer in the forest at Stratford and brought before the magistrate, Sir Thomas Lucy. It is quite possible that the story is true, and certainly in later years Shakespeare made sly fun in one of his plays of this same Sir Thomas, which seems to show he had some feeling against him.



In this picture, by Eduard Ender, Shakespeare is seen at the height of his fame in London, reciting his great tragedy of "Macbeth" before Queen Elizabeth and a group of her courtiers. Although we have no knowledge that such an event ever took place, it is certainly pleasant to contemplate the greatest poet thus entertaining the greatest English queen in that wonderful age when the British Empire came into being.

"Fear no more the heat o' the sun,
Nor the furious winter's rages;
Thou thy worldly task hast done,
Home art gone, and ta'en thy wages;
Fear no more the lightning flash,
Nor the all-dreaded thunder stone,
Fear not slander, censure rash,
Thou hast finished joy and moan,
Quiet consummation have,
And renown'd be thy grave."

What kind of man was William Shakespeare, so simple in his birth, life, and death, so lasting in spirit and influence? The character of the poet—the impression he made on those who knew him—is outlined in a number of jottings by his friends in prose and verse. They all picture him as a delightful companion. The older writers of his day, when their first jealousy of the country-bred poet was over, were sorry they had felt jealous, and acknowledged him with admiration as an open-hearted friend, loyal, and cast in the gentlest mould.

As his life went on, Shakespeare seems to have known much personal sorrow, and with its coming the tone of his mind changed, so that from being merry and careless, full of rather wild and frolicsome spirits, and fond of the "jigging rhymes" his friend Kit Marlowe had forsaken for blank verse, he grew grave, tenderly humorous, thoughtfully fanciful, graciously wise. As his thoughts of life deepened with his changing spirits, his mastery of the art of writing in a freer style, with power and beauty, increased. So to understand Shakespeare's plays we must know in which part of his constantly expanding life each was written. Four words will suggest the changing spirit of the poet's writing—jollity, romance, strength, peace. They mark natural stages of human growth. In this, as in so much else, Shakespeare seems to have been a miniature of mankind.

We must now pass along his life again, observing it through his works, and noting in a few outstanding examples the growth of his character and art.

The period of Shakespeare's activity as a writer balances about the year 1600, beginning about twelve years before that date and ending twelve years afterwards—1588 to 1612.

Though he was a poet all the while, we must remember that he was by business an actor, and began to write at first as an improver of old plays for acting, and not for reading. In this attempt he

joined with others, such as Marlowe, who at first had more experience than himself as a writer. At this time people were eager to see the history of their country acted, for they had few opportunities of reading it. One of the first plays that Shakespeare revised was the "First Part of Henry IV," and the first play of his own making was "Love's Labour's Lost," written in 1590 or 1591. It remains the best example of his youthful manner.

The "Comedy of Errors" and "Two Gentlemen of Verona" were written in the same early period. These plays are light and bright, showing gaiety of spirits, and they jingle with many rhymes. They include, too, pretty poetical touches, such as the sweet description of a brook's journey:

"The current that with gentle murmur
glides
Thou knowst, being stopped, impatiently
doth rage;
But when his fair course is not hindered
He makes sweet music with the enamelled
stones,
Giving a gentle kiss to every sedge
He overtaketh in his pilgrimage;
And so by many winding nooks he strays,
With willing sport, to the wild ocean."

During this 'prentice period the poet wrote his first tragedy, "Romeo and Juliet," a play compounded of poetry and love; and then passed on to the dainty fancies, bright and aerial, of "A Midsummer Night's Dream." Before the end of the year 1594 he had begun to write historical plays seriously. "Richard III" was now written, and "King John."

SHAKESPEARE'S LOVE OF ENGLAND

No other poet has so passionately demanded love for "Our dear mother, England," as Shakespeare. Such words as these close "King John:"

"This England never did nor ever shall
Lie at the proud foot of a conqueror,
But when it first did help to wound itself.
Now these her princes are come home
again,
Come the three corners of the world in
arms
And we shall shock them. Nought shall
make us rue
If England to itself do rest but true."

The same note was sounded in "Richard II," where John of Gaunt is the mouthpiece of an exultant patriotism:

"This royal throne of kings, this sceptred
isle,
This earth of majesty, this seat of Mars,

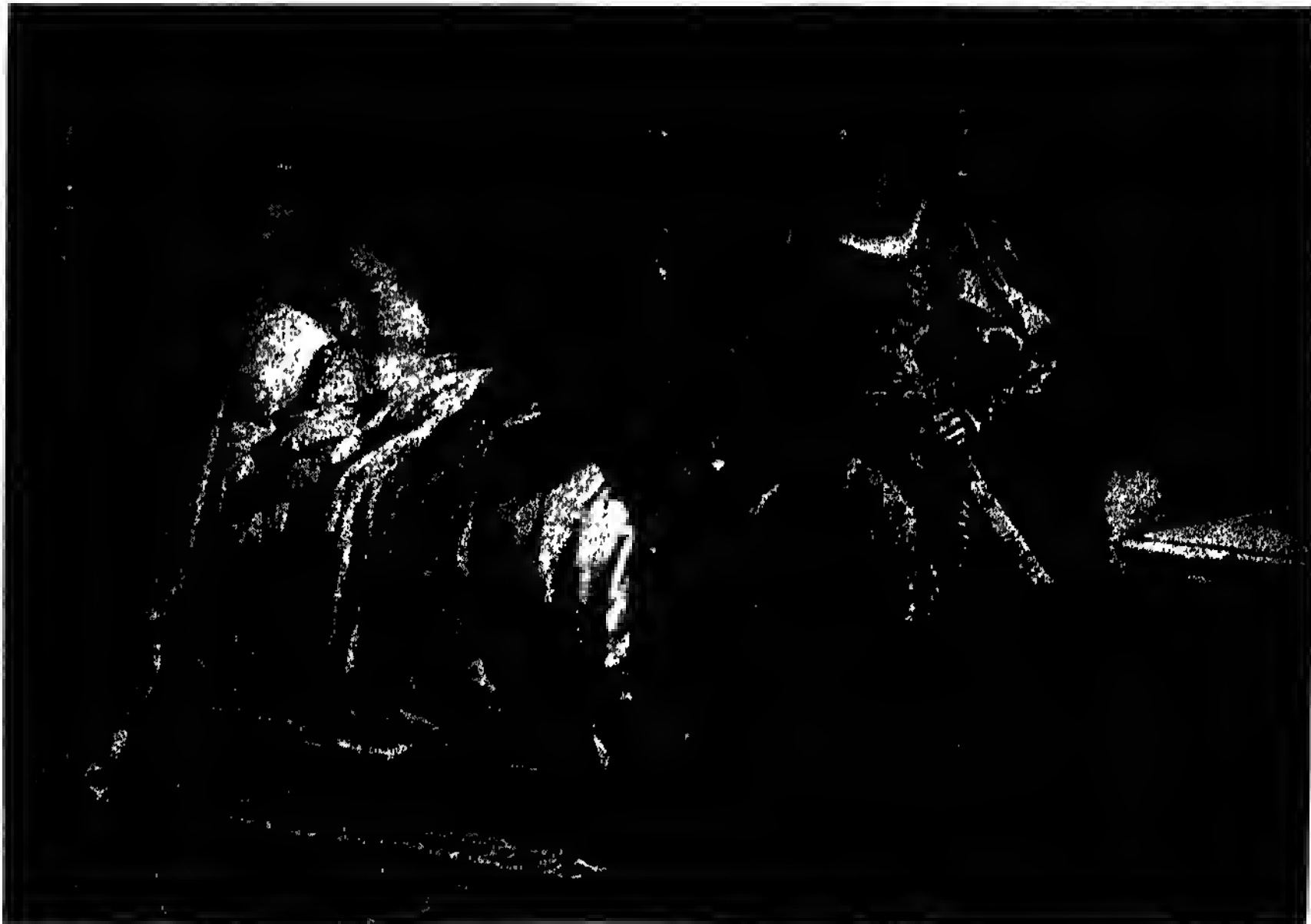
SCENES FROM SHAKESPEARE'S PLAYS

Shakespeare pictures would make up a gallery almost worthy of the plays; except the Bible, no book has given so many opportunities to the painter as Shakespeare's plays. Here we give pictures of eight scenes from the plays, painted by famous artists.



ROMEO AT THE TOMB OF JULIET—FROM "ROMEO AND JULIET"

Romeo, returning from exile to find Juliet in the tomb, mourns her as dead, and dies himself as she awakes.



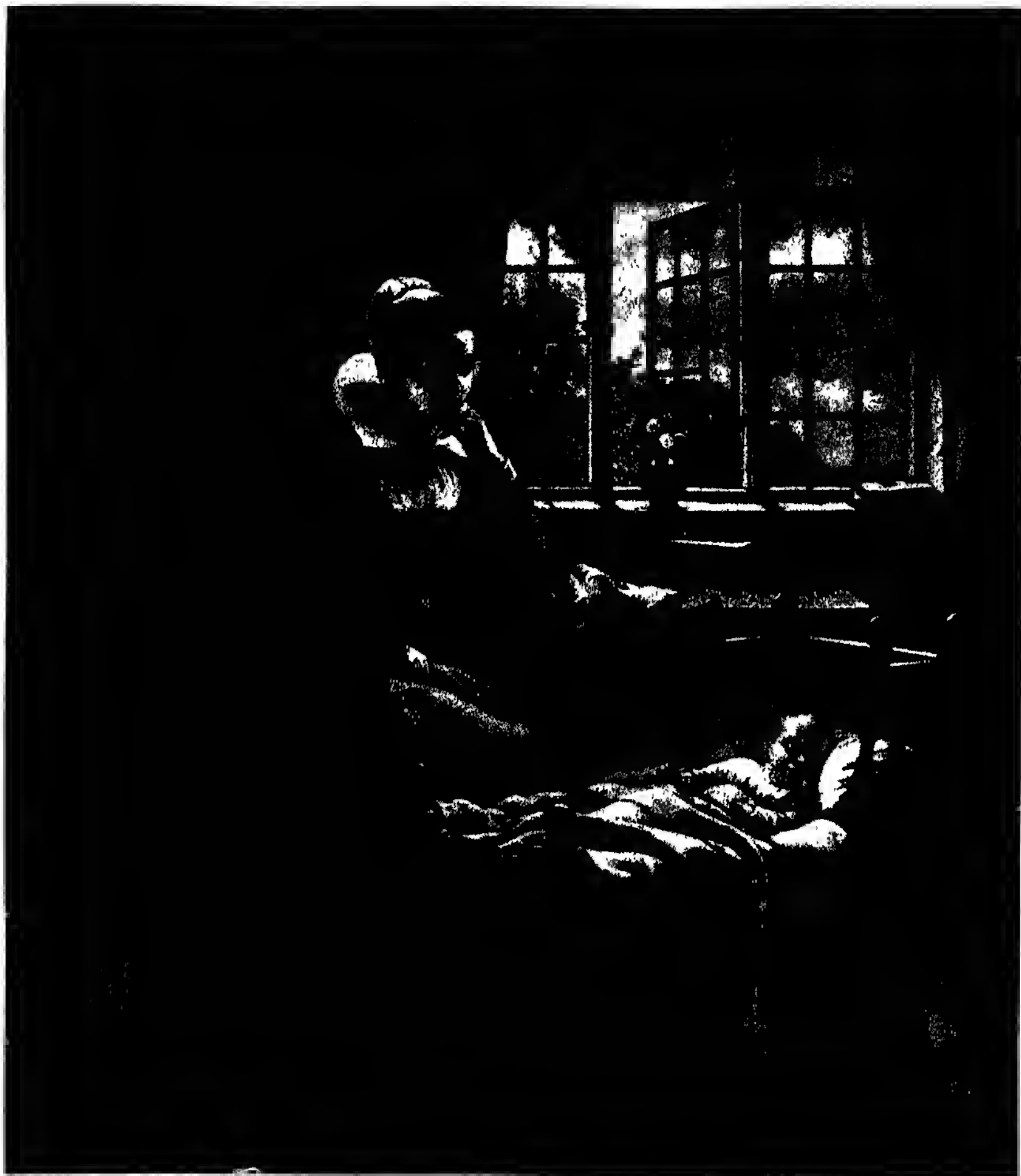
OTHELLO WATCHES THE SLEEPING DESDEMONA—FROM "OTHELLO"

Desdemona, "a maiden never bold," falls in love with "what she fears to look on," and marries Othello.

THE BOOK OF MEN AND WOMEN

This other Eden, demi-paradise,
This fortress built by Nature for herself
Against infection and the hand of war,
This happy breed of men, this little world,
This precious stone set in the silver sea,
Which serves it in the office of a wall
Or as a moat defensive to a house,

known and admired as a poet as well as
a playwright, for both "Venus and
Adonis" and "Lucrece" had appeared,
and his sonnets were probably written
and privately circulated, though they were
not printed till many years after. In



"You may be Christ or Shakespeare, little child: a savior or a sun to this lost world." A picture of Shakespeare in his cradle, painted by T. Brooks in the room where the poet was born.

Against the envy of less happier lands,
This blessed plot, this earth, this realm,
this

England,
This land of such dear souls, this dear,
dear land."

At the Christmas of 1594 Shakespeare
was acting before Queen Elizabeth, and
evidently was a favorite. He was now

1596 the perfect comedy of "A Merchant
of Venice," was composed; and before
the end of the century the English his-
torical plays had been brought to a cli-
max in "Henry V."

IF SHAKESPEARE HAD DIED
BEFORE

But the writings that have made him
supremely great in the eyes of all the

AN IMMORTAL ROGUE AND A BEAUTIFUL BOY



FALSTAFF REVIEWING HIS RAGGED TROOPS—FROM "KING HENRY IV "

A wit, thief, glutton, coward and boaster, yet no character of Shakespeare's is more alive with merriment.



ARTHUR WITH HIS MOTHER AND THE EARL OF SALISBURY—FROM "KING JOHN "

Arthur's appeal to Hubert is perhaps the most pathetic pleading in all Shakespeare's plays.

generations that have followed him had yet to be written. If Shakespeare had died in the year 1600 he would have lived in men's memory as a poet of rare insight, whose work in words would defy the hand of Time, whose power he so hauntingly described:

"Time's glory is to calm contending kings,
To unmask falsehood and bring truth to light,
To stamp the seal of time in aged things,
To wake the morn and sentinel the night,
To wrong the wronger till he render right,
To ruinate proud buildings with thy hours,
And smear with dust their glittering golden towers.

"To fill with worm-holes stately monuments,
To feed oblivion with decay of things,
To blot old books and alter their contents,
To pluck the quills from ancient ravens' wings,
To dry the old oak's sap and cherish springs,
To spoil antiquities of hammered steel,
And turn the giddy round of fortune's wheel."

THE LOVELY SONG TO SYLVIA

Had he died in 1600 he would have been known as a writer of lovely songs that seem to sing themselves as the winds and waters sing—songs like that lovely song to Sylvia:

"Who is Sylvia? What is she
That all our swains commend her?
Holy, fair, and wise is she;
The heaven such grace did lend her
That she might admired be.

"Is she kind as she is fair?
For beauty lives in kindness;
Love doth to her eyes repair
To help him of his blindness,
And, being helped, inhabits there.

"Then to Sylvia let us sing.
That Sylvia is excelling;
She excels each mortal thing
Upon the dull earth dwelling.
To her let us garlands bring."

He would have been known as a writer of delightful comedy and noble history; but he would not have had the reach and depth and strength of mind we now see in him.

What it was that came to Shakespeare and saddened him, and set him to the task of sounding the profundities of character and passion, we shall never know. But for some reason he became more gravely meditative. He felt himself growing old:

"That time of year thou may'st in me behold,
When yellow leaves, or none, or few,
do hang
Upon those boughs that shake against the cold,
Bare ruined choirs, where late the sweet birds sang.
In me thou see'st the twilight of such day
As after sunset fadeth in the west,
Which by and by black night doth take away."

Even in the lovely open-air tale of "As You Like It" there comes a minor note prophetic of much to follow:

"Blow, blow, thou winter wind,
Thou art not so unkind
As man's ingratitude.
Thy tooth is not so keen
Because thou art not seen,
Although thy breath be rude.

"Freeze, freeze, thou bitter sky,
Thou dost not bite so nigh
As benefits forgot.
Though thou the waters warp,
Thy sting is not so sharp
As friend remembered not."

And now it was—perhaps because in his prosperity he had greater leisure for reading and thought—that he passed on to narrate noble history in "Julius Cæsar;" to sound the depths of thought in "Hamlet;" to study with a terrible fidelity the fatal blindness of jealousy in "Othello;" to lay bare the secret workings of unchecked ambition in "Macbeth;" and to rack our very hearts with tragedy in "King Lear." All these stupendous plays were written between 1600 and 1606. And then followed, towards the end of Shakespeare's writing days, a restful period, and he finished his labors with the gentle, pensive wisdom of "Cymbeline," "The Winter's Tale," and "The Tempest," which is thought to be his latest complete work.

ARIEL'S SONG OF FREEDOM

To the very end the poet kept unimpaired his elf-like fancy and his tuneful touch. What could be more graceful than the song of freedom of the happy sprite, Ariel, in "The Tempest?"

"Where the bee sucks, there lurk I;
In the cowslip's bell I lie,
There I couch when owls do cry.
On the bat's back I do fly
After the summer merrily.
Merrily, merrily, shall I live now
Under the blossom that hangs on the bough."

TWO OF SHAKESPEARE'S HEROINES



OPHELIA AND THE GUILTY KING AND QUEEN OF DENMARK—FROM "HAMLET"

This picture, by Miss Henrietta Rae, is published by permission of the Corporation of Liverpool.



ROSALIND GIVES ORLANDO A CHAIN—FROM "AS YOU LIKE IT"

This picture is from the painting by Harold Speed.

The longer Shakespeare wrote, the more he built up his plays on the characters of the people who were introduced. He might borrow the main incidents from other men's writings—he nearly always did that—but the characters were his, and the drama of their development was original. For the groundwork of his stories he ransacked Europe, old and new. It mattered not to him where the scene was laid. He not only traced for his patrons the stirring history of their own land, but he carried them to Greece,

This poet gave all womanhood afresh to the world of books by his marvelous portraits of heroines, daring, noble, or sweet. Having exhausted the lands of reality, he annexed the kingdoms of the air, and peopled them with such fascinating sprites, monsters, ghosts, and witches—Ariel, Caliban, Puck, Titania, and the rest—that they disarm our reason by charming our fancy. We have majestic thought surging through deep-toned verse; melody of words in haunting songs, snatches from Nature's eternal hymns;



KING LEAR GIVES CORDELIA'S SHARE TO HER SISTERS—FROM "KING LEAR"
Cordelia, refusing to flatter the vain old king, her father, is cut off in favor of her cunning sisters.

ancient Rome, Italy, France, Spain, Germany, Egypt, Cyprus, Denmark, Scotland, and early Britain.

SHAKESPEARE'S POWER OF UNVEILING THE PAST

Spirited away to Rome in the days of "the mighty Julius," we learn far more of the Roman public spirit from Shakespeare than we can realize for ourselves among the eloquent ruins of the palaces he never saw. He has the power of revealing the secrets of centuries of history, in a few speeches. Through his Shylock, for instance, we understand the position of the Jew in the Middle Ages far better than we could know it through a library of histories.

humor droll, or sly, or rollicking; and homely wisdom from simple tongues.

THE SUPREME MAN OF THE WORLD

It seems as if in Shakespeare the complete scale of the human mind and utterance had been sounded. The world ripened rapidly into the age of Queen Elizabeth, and produced, from the simplest surroundings, a supreme man, so comprehending that all the world agrees with what Matthew Arnold said of him:

"All pains the immortal spirit must endure,
All weakness which impairs, all griefs
which bow,
Find their sole speech in that victorious
brow."

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5673.

HENRY VIII. DISMISSING CARDINAL WOLSEY



Henry VIII. was a despotic king, who allowed nothing to stand between him and his desires. When Cardinal Wolsey could not persuade the Pope to cancel Henry's marriage with Queen Catherine, the king cast his minister from power. When Wolsey knew that he had lost the king's favor, he staked everything on a final interview. Henry acted at first as though he were going to receive Wolsey back into favor, but at last the cardinal was dismissed coldly, and never saw the king again.

WASTE WATER FLOWING OVER THE SPILLWAY, GATUN DAM



The Gatun Dam across the Chagres valley is a mile and a half long, and a third of a mile thick at the bottom. A core of stone was made, clay was forced in between the stones, and then thousands of loads of earth were dumped upon it. In the centre of the valley was a small hill, and here the dam is of concrete, with fourteen large gates near the top. This is called the spillway. When the water in Gatun Lake becomes more than eighty-five feet deep, some of the gates are opened, and the waste water rushes out with tremendous force, and finds its way into the Atlantic.

The Book of THE UNITED STATES

WHAT THIS STORY TELLS US

FOR four hundred years the idea of a canal across the narrow isthmus joining North and South America has captivated the imagination of men. The work seemed so difficult and so expensive, however, that no one tried it for many years. When the Suez Canal was completed, Ferdinand de Lesseps, who had planned and managed that work, determined to join the Atlantic and the Pacific. He failed, partly because of unhealthful conditions on the isthmus, and finally the United States undertook the work. This story tells how disease was conquered first, and then how, by the aid of brains and machinery, the immense task of digging the Canal was done. Now ships easily pass from ocean to ocean, climbing eighty-five feet above the sea by means of locks, and then descending again. Our pictures will give you an idea of the difficulty of the work and of the appearance of the Canal and the locks.

DIGGING THE PANAMA CANAL

EVER since explorers found that only a few miles of land separated the Atlantic and Pacific Oceans between the two continents, men have spoken of joining these two oceans by digging a canal. It was evidently so expensive and so difficult that no real attempt was made until the year 1878, when a French company secured from the Republic of Colombia the right to dig a canal through the Isthmus of Panama. At the head of the company was Ferdinand de Lesseps, who had succeeded in separating Africa from Asia by means of the Suez Canal, and spurred on by his success in this great work, he felt sure that he could accomplish this task on the other side of the world quite as easily.

It was found, however, that the two pieces of work could not be compared. The Suez Canal is only a great ditch through the sand or through shallow lakes. While the weather is hot the climate is not particularly unhealthful for Europeans and workmen could be secured from the neighboring tribes.

In Panama tropical conditions prevailed. During the rainy season vegetation grew up almost in a night, drainage was difficult, and it was found that many men engaged on the work died.

CONTINUED FROM 5496

Mountains had to be dug through. The attempt to get the inhabitants of the district to work was unsuccessful. Why should they work? The soil was so rich that a few hours' work in the course of a month would furnish abundant food, and therefore they could see no reason why they should work, hour after hour in the rain or the sun, carrying away soil, blasting the rock and doing the other hard tasks which are necessary to be done in cutting a canal.

At first it had been announced that \$127,000,000 would be sufficient to do the work; then the larger sum of \$180,000,000 was announced, and finally it was seen that this latter sum would not begin to see the work completed. Though Mr. De Lesseps' plans were good and though much of the work done was well done, some bad men got control of the company, much money was stolen and the company was thrown into debt. Finally De Lesseps was arrested, though it seems that he himself had not been guilty of dishonesty. The French people would not put any more money into the Canal and so for several years the whole plant lay idle. The houses of the Canal workmen were hid in vines in the undergrowth which sprang up.

It seemed that all traces of the French attempt were to be wiped out.

Meanwhile in this country there was a great interest in the Canal and this interest grew as our Western states developed. Some men wished to buy out the French company and continue the work across the Isthmus of Panama. Others preferred to cross the Isthmus of Nicaragua, further to the north. Here the distance between the Atlantic and Pacific was much wider, but it was expected to make a large lake and a river a part of the Canal.

Another marvelous project was to cross the Isthmus by means of a ship railway. An immense frame or cradle capable of receiving the largest ship was to be constructed. This was to be mounted upon many-wheeled trucks running upon several railway tracks. These tracks on each side of the Isthmus were to extend into the sea. The cradle would be pushed out into the water, the ship was to sail in and the powerful engines would then draw the trucks out upon the land and carry the ship over to the other side of the Isthmus, where it would be lowered into the sea.

Finally, after much discussion, the Panama route was chosen, the French company was bought out for \$40,000,000 and the United States was ready to begin. Just then the Republic of Colombia seemed to intend to go back upon the bargain it had made and to charge the United States a much higher price than had been agreed upon for the right to cut the Isthmus. The citizens of the Isthmus were unwilling to see so much money lost and therefore they suddenly declared themselves independent of Colombia in 1903, and created the Republic of Panama. An agreement was immediately made with the new republic. The United States agreed to pay \$10,000,000, and after ten years had passed to pay \$250,000 a year.

The building of a sea-level canal was at first mentioned, but soon, though less than half of the committee which had charge of the work reported in favor of a lock canal, it was decided to build the latter type, that is to say, a canal which is not level all the way across but one in which the boats are raised by means of locks as explained in another part of our book. The Republic of Panama granted to the United States a strip of

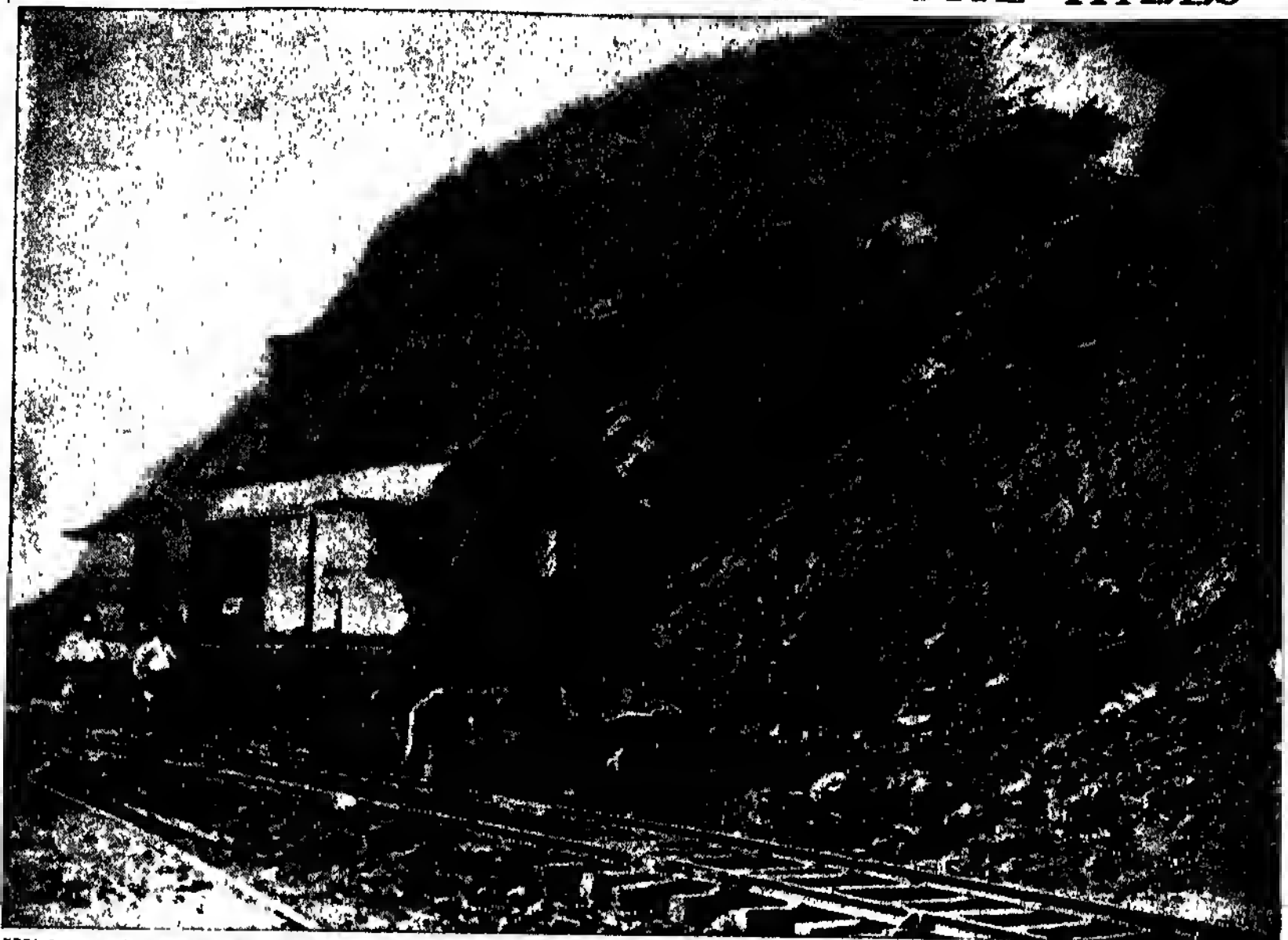
land five miles wide on each side of the Canal. This is called the Canal Zone. Also the privilege of controlling the health conditions of the cities of Colon and Panama was granted, though the United States has nothing to do with the government of these cities outside of the health matters.

Now let us see what has been done. Beginning in Limon Bay on the Atlantic side near Colon, the Canal extends 500 feet wide and 41 feet deep to Gatun, about seven miles away. Here are the first locks, three of them, each a thousand feet long. A great dam, which is more like a hill, has been thrown across the valley of the River Chagres. This hill is so thick and contains so many million loads of earth and stone that it is not believed that the force of the water can ever break it, though the river sometimes rises 25 feet in 24 hours. This dam makes a great lake of the surrounding country and through this lake the width of the channel is for a part of the time more than one thousand feet.

The most interesting part next to the building of the great dam is possibly Culebra Cut, where the Canal cuts directly through a mountain. We show you a picture of this and it will make you realize how small men are. This work has been done chiefly by means of steam shovels, which are also shown you in the picture. These great machines run by engines scooped into the side of the hill, gathering up hundreds of pounds of dirt, soft rock and shattered stone. The man in charge with a little twist of the wrist turned the great scoop so that its load dropped into a car standing near. When the cars were full the engine pulled off to a section which was to be built up rather than cut down.

The steam shovels were of various sizes. The one called the "95-ton shovel" seemed to do the best work. This carried as high as five cubic yards at a time. When a rock was too large to go inside the shovel it was blasted into smaller fragments. The trains which carried away the dirt and rock were very long, as it was sometimes necessary to carry the material many miles. Some of it was used in filling in swamps, and much was used to extend the breakwater upon the Pacific side.

THE MONSTER THAT ATE THE HILLS



Without the steam shovel such a work as the Canal could never be accomplished. Here you see the great scoop holding five cubic yards, gathering up earth and stone which had been broken up by the discharge of dynamite or blasting powder. In the next picture you will see what becomes of the load. Five cubic yards weigh several thousand pounds.



The man in charge of the steam shovel, by moving the lever, raised it, and the great arm to which the scoop was attached, swung around and deposited its load in a dump car. When all the cars of the train were full the engine drew them to a place where it was desirable to fill in rather than to dig out.

Photographs copyright by Keystone View Co.

In 1855 a railroad was constructed across the Isthmus and this road is now owned by the Government. The change in the plan of the Canal would bring a large part of the tracks under water, and therefore a new line was laid out for it. Much of the material taken from the great cuts was used to make embankments for this road. When enough material had been dumped in any one place, by a very ingenious contrivance the whole railroad was lifted and moved several feet to the right or left as the

On the Pacific side the two principal locks by which our ship descends from its height are at Miraflores. Here the Canal drops fifty-five feet. It has already dropped thirty feet at the Pedro Miguel Locks, for much of the Canal is eighty-five feet above sea-level. The variation in the tide is much greater on the Pacific coast than on the Atlantic.

Though the actual work in digging the Canal was wonderful, far surpassing anything which has ever been accomplished before in the history of mankind,



Photograph by Brown Bros.

The most stubborn part of the cut through Culebra Mountain was the Cucaracha slide. Here the side of the hill slid down into the canal after water had been admitted, entirely filling it. Some of the material was pumped out by dredges and the remainder was taken out by steam shovels. The struggle with the slides caused the death of Colonel Gaillard, the engineer in charge of this part of the work.

case might be. Of course this work was slow and the track was not very smooth. There were dozens of these temporary railroad tracks along the Canal occupying one position to-day and an entirely different one next week.

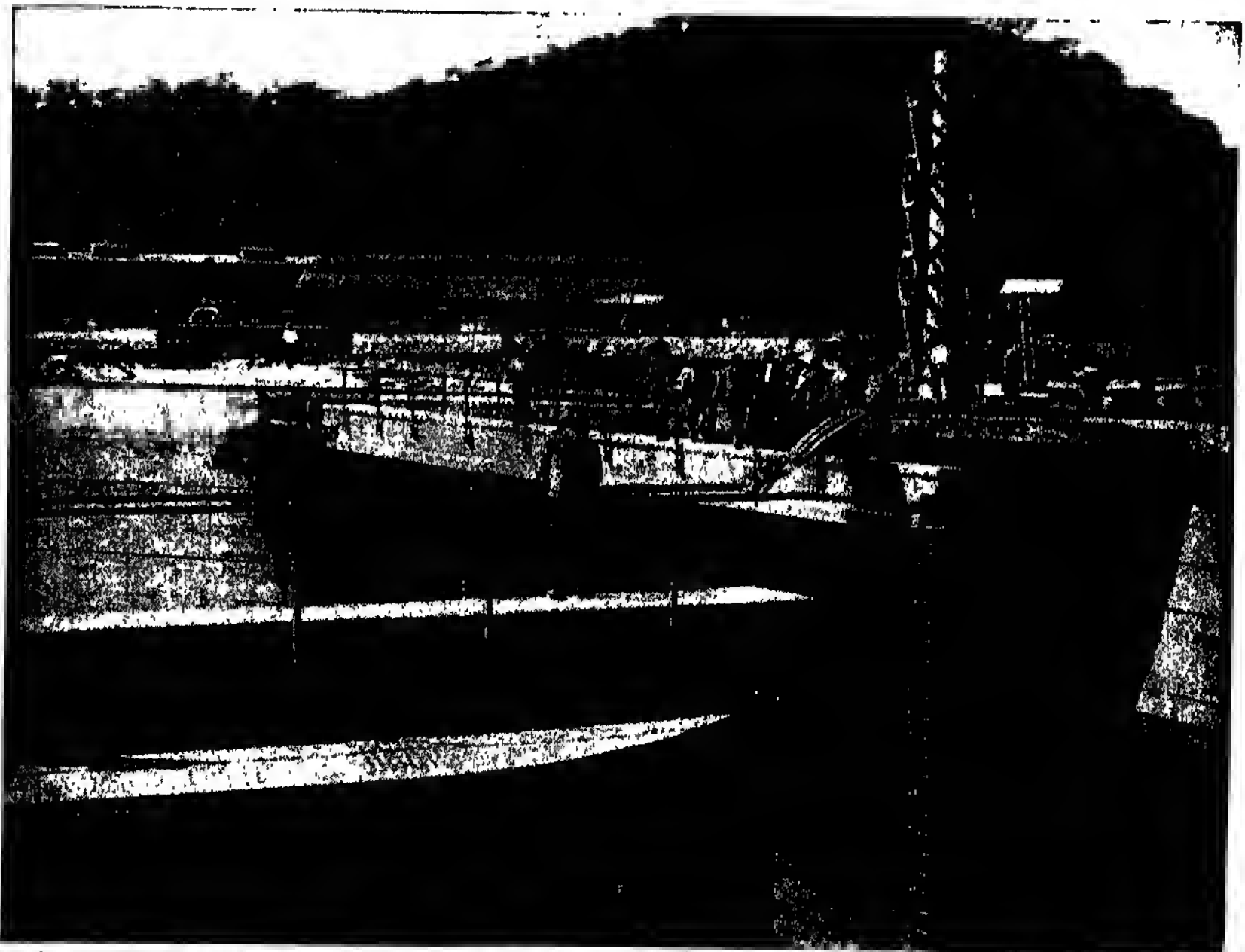
Culebra was the most difficult and most uncertain part of the work, for just when the men thought they had gone far enough, the earth slid down from the sides again, sometimes filling up the Canal entirely. These slides continued after water was let into the Canal, and once blocked the entire passageway. Indeed it is not certain that they have stopped entirely yet.

the work of the Government in making the Isthmus healthful and in taking care of its army of laborers was even more surprising. Years ago, both Panama and Colon were subject to yellow fever, which at times almost paralyzed business. Since it has been discovered that yellow fever is always caused by the bite of a particular kind of mosquito, the Government engineers had a basis upon which to work. The sanitary force under Dr. W. C. Gorgas, installed a system of sewerage in the two cities, caused the streets to be paved, and prevented the collection of heaps of garbage and stagnant water in which mos-

GATUN LOCKS AND THE GREAT GATES



Here is a view of the Gatun locks looking toward the Atlantic Ocean. The first gates are to keep out the tides. When the ship enters the first chamber the gate is closed behind and water is let in from the lock above, raising the boat over twenty-eight feet. The gate to the middle lock is then opened and the water rises another twenty-eight feet. This process is then repeated and the boat rises another twenty-eight feet and passes out into Gatun Lake. The locks will accommodate a ship 1,000 feet long.



This picture shows a pair of the immense lock gates, which open and close like doors. They are thick, as you see, and very strong. Some of them are eighty-two feet high. The machinery to move them, while very strong, is still very easily operated. If by any chance one of them should break or refuse to work, a temporary gate can be set up very quickly.

quitoes might breed. They kept the undergrowth cut down along the Canal and sprayed the ditches with crude oil, thus killing the young mosquitoes. As a result yellow fever has become almost unknown. Before any actual work was done upon the Canal nearly two and a half years were spent in making the region healthful.

Over two thousand buildings were constructed, including offices, hospitals, hotels, kitchens, shops and barracks. Many of the buildings left by the French company were repaired and made of use. It was decided, in order to be sure that the men should have a supply of well cooked and suitable food, the Government must undertake the work. Good wages were paid to the laborers and they were furnished with excellent meals at low prices. Provision was also made for the men who occupied more responsible positions. They were encouraged to bring out their families. The single men lived in barracks or cottages and boarded at the hotels under Government supervision. The married men were furnished with quarters and had the privilege of buying direct from the Commissary Department. This Commissary Department was very important and controlled several important manufacturing plants. It was in reality a great department store. It controlled an ice plant which turned out about 90 tons of ice a day. It baked 14,000 loaves of bread, made 250 gallons of ice cream, roasted a thousand pounds of coffee and was able to take care of 7,500 pieces of laundry a day. Refrigerator cars ran from its cold storage warehouses to different parts of the Zone and every morning the supply train left the central point, depositing such goods as were wanted at the local commissary stations, where the employees and hotels made their purchases. Excellent hospital accommodations were provided at Ancon and Colon.

In the messes arranged for the men the division was by the coin in which the men were paid. One set of accommodations was provided for those on the "gold roll" and another for those on the "silver roll." Generally Americans and Europeans were on the gold roll and the West Indians and the residents of the Zone on the silver roll. The meals of those on the silver roll were charged for at one price, and those on the gold

roll at another. In most of the mess halls for the gold-roll employees there were two dining-rooms, in one of which the employees might eat without their coats.

It is estimated that the Canal has cost almost \$400,000,000. Such a sum staggers one. In fact, we cannot comprehend this amount of money. So far as we can now see, the Canal can never pay a profit in money. Though the locks can be filled in eight minutes, a considerable time is necessary to take a ship through, and it is estimated that not more than fifty-eight ships can pass through in a single day of twenty-four hours,—for the Canal has been so brilliantly lighted that ships can pass by night as well as by day. The ships are not allowed to go through under their own power, but are towed by electric locomotives. The tolls charged can never be large enough to pay much more than the cost of operating the Canal.

But it was not for direct profit alone that the United States determined to build the Canal. Our ships are at a great disadvantage in trading with Asiatic countries, since our chief seaports are upon the eastern coast, and in order to reach these eastern markets a ship must first sail across the Atlantic and through the Suez Canal or else go altogether around South America.

Then, too, the condition of affairs at the beginning of the Spanish-American War has not been forgotten. Then our fleet was divided, and your parents can tell you something of the wonderful voyage of the Oregon around Cape Horn and into the Atlantic Ocean. With the Canal, ships can be easily transferred from one ocean to the other.

The first boat to go through any lock on the Canal was the little tugboat, Gatun, which was lifted through the three Gatun locks on September 26, 1913. This was a great day for all engaged on the work, for it showed that the end of their labors was at last in sight. Soon larger ships went through.

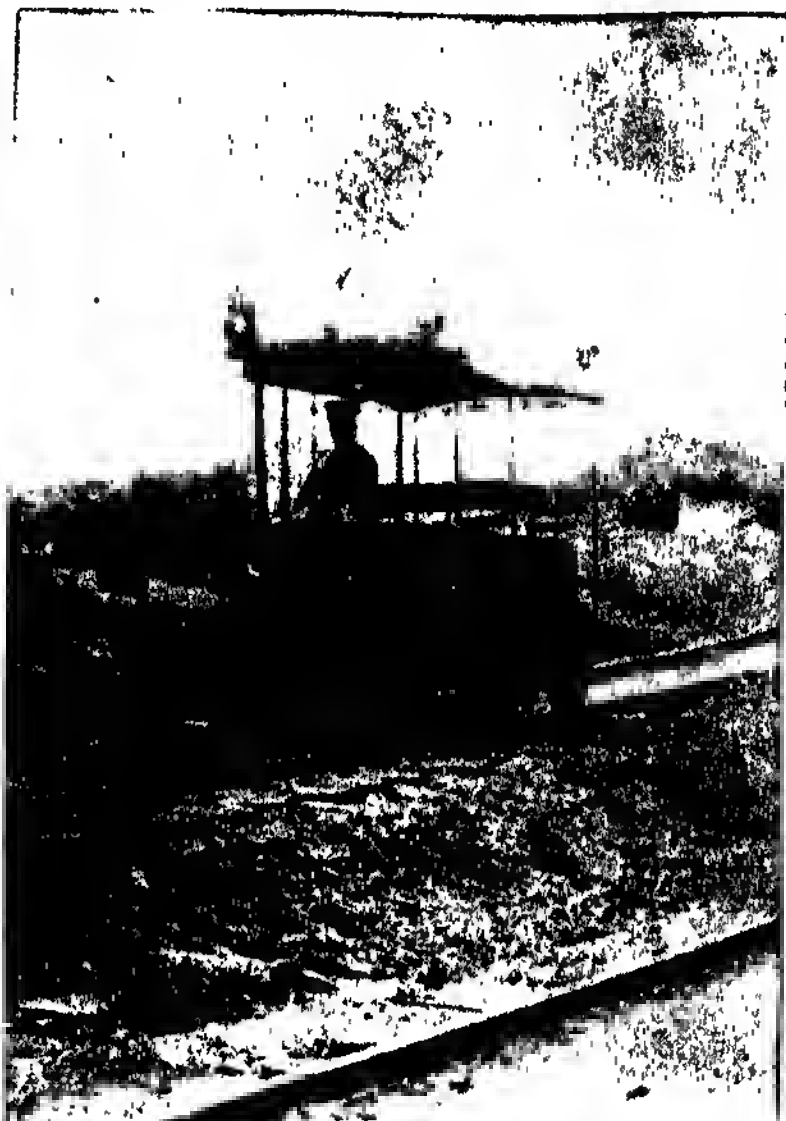
Very few countries in the world are rich enough to undertake such a work and it is certain that no engineers could have done better than Col. G. W. Goethals, the chief engineer, and his principal assistants, all United States Army engineers, have done.

THE NEXT STORY OF THE UNITED STATES IS ON PAGE 5711.

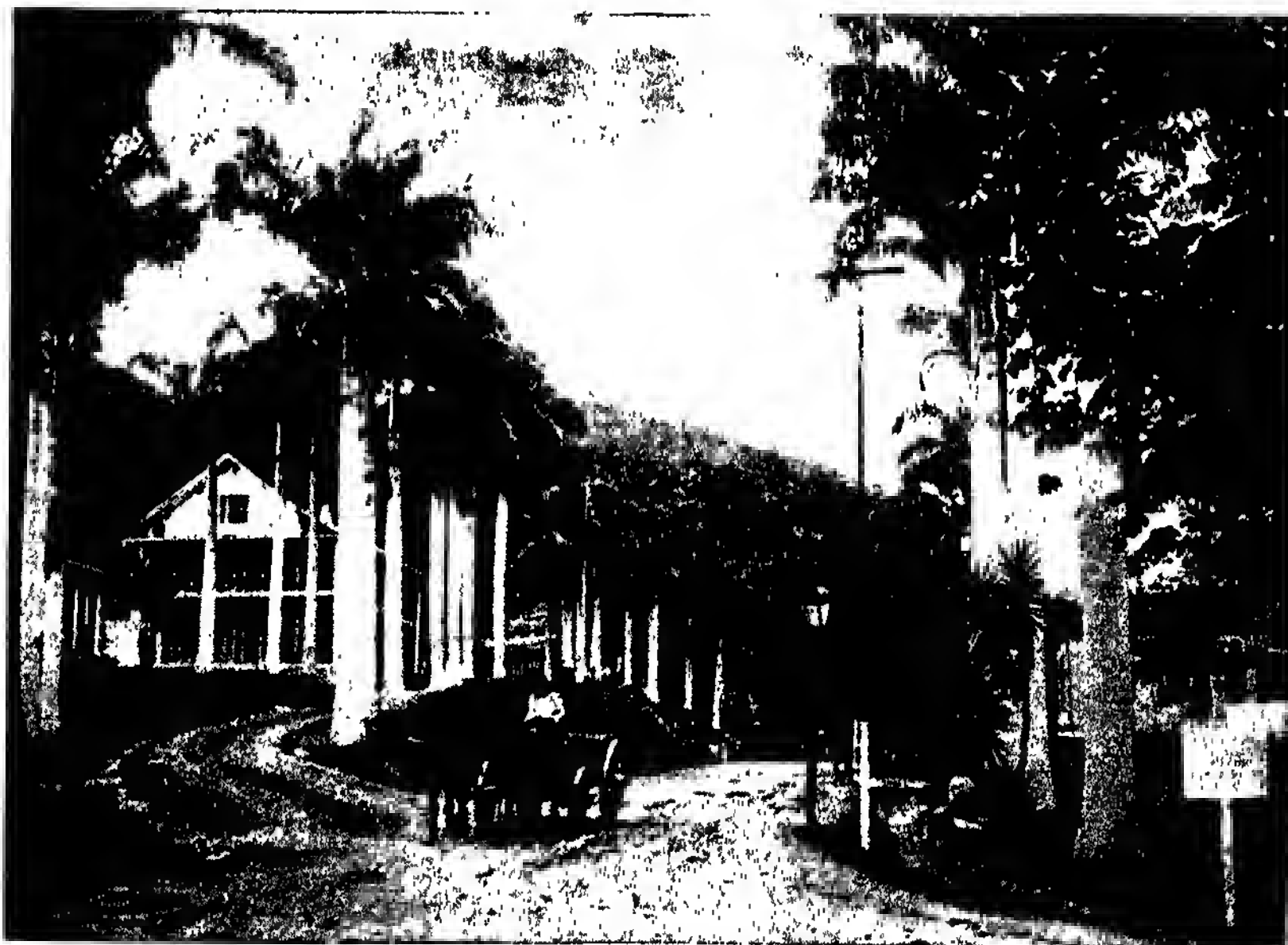
SCENES ALONG THE ZONE



When the French Company became bankrupt in 1889 much of the machinery was left on the ground. Here we see hundreds of good locomotives overgrown by vines and eaten up by rust.



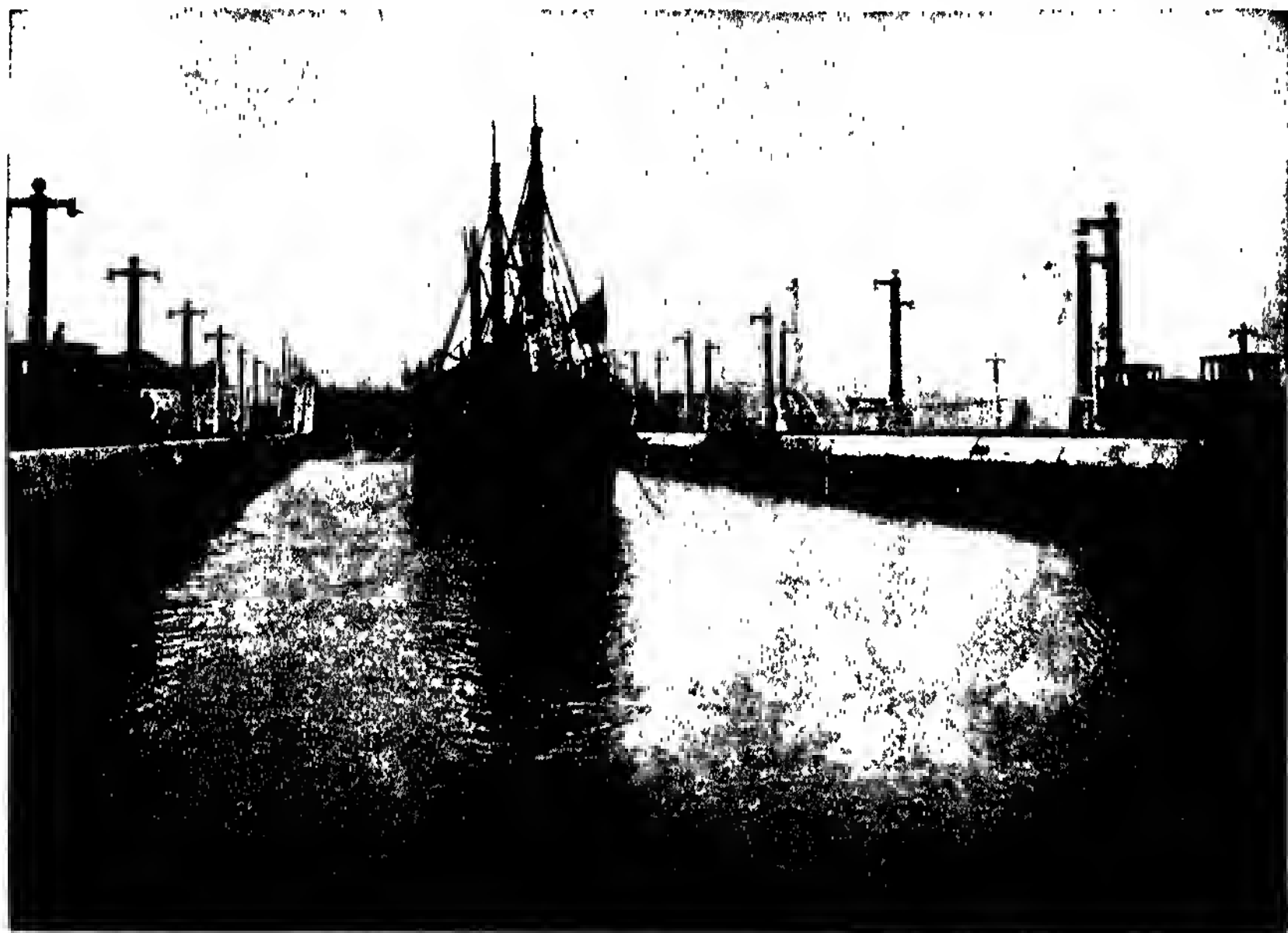
The engineers and supervisors moved from one part of the work to another in the railroad automobile, a picture of which you see here. It was like any other automobile, except that it ran on rails.



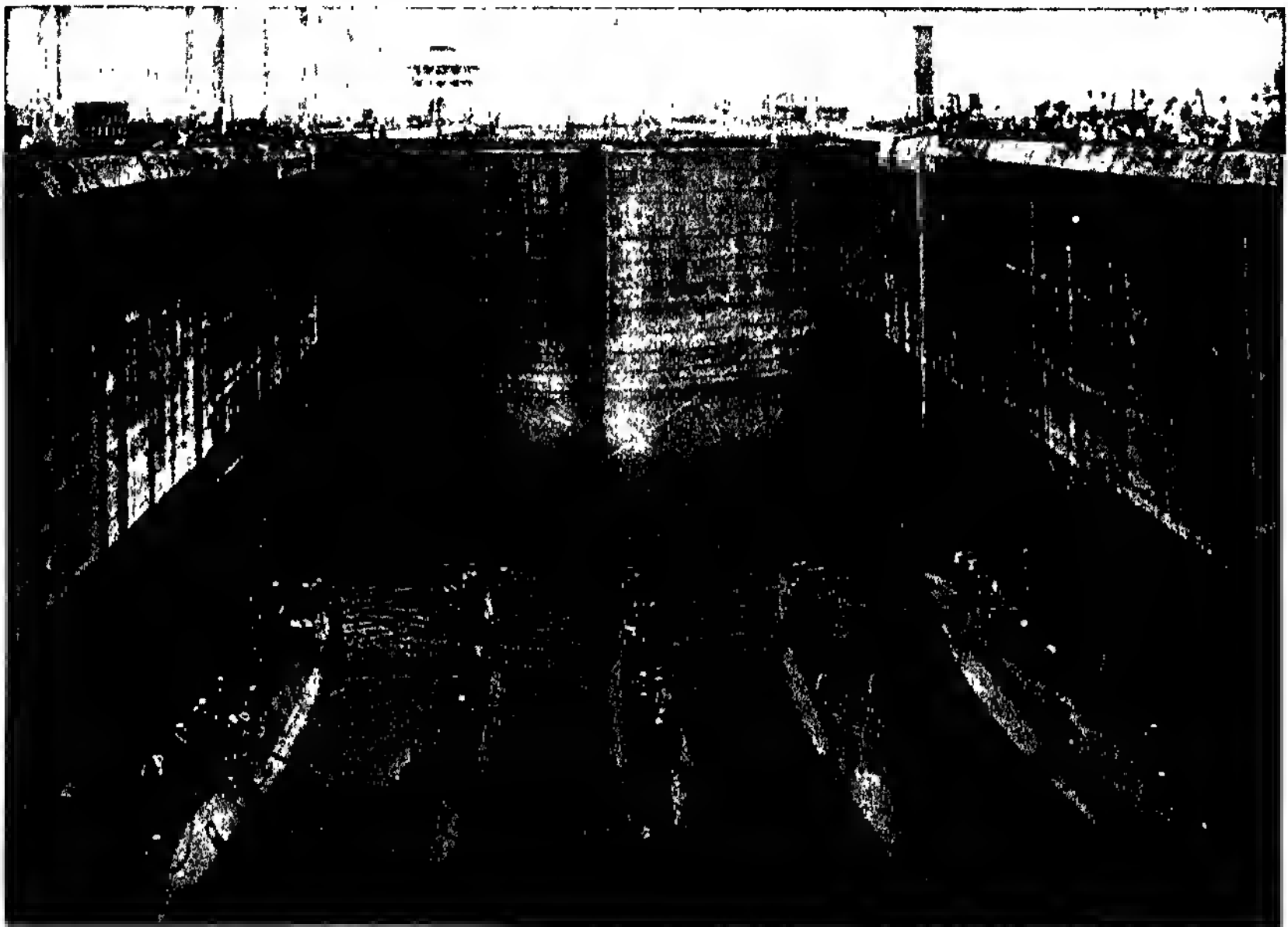
Every provision was made by those in charge of the Canal for the health and comfort of those working on the Canal. Here is a picture of the attractive grounds of the Hospital at Ancon. Owing to the excellent care of the sanitary force, the health record of the Zone was better than that of many American cities. In the French period thousands died of yellow fever and other tropical diseases.

Photographs copyright by Keystone View Co.

INSIDE THE LOCKS WITH THE SHIPS



Here you see a ship in one of the chambers of the great Gatun locks. The electric locomotives seen on the banks on both sides hold the ship steady, now drawing it along, and now holding back. Soon the great gates will open and the water will seek the lower level. The ship will then be drawn forward, and the gates closed. The process will be repeated three times before the ship has climbed to Gatun Lake.



Submarines are delicate craft, and here you see five locked together going through the Canal. One of the reasons why the Canal was built was to provide a quicker and easier way for the warships of the United States to pass from one ocean to the other. The ship shown above is the Severn, which is the "mother ship" for the submarines. This means that it carries supplies, and a workshop where repairs can be made.

The Book of FAMILIAR THINGS

WHAT THIS STORY TELLS US

TO some of us the most wonderful of all the marvelous inventions, of which we have so many in these days, is the talking machine, no matter by what name we call it. That a flat black disc, covered with tiny lines, should be able to give to us the golden voice of Ternina or Caruso, the wonderful tones of a violin in the hands of a master, the full crash of a brass band, or the winged words of a great orator, seems impossible to believe. Yet we know that it is true. Hardly a boy or girl who reads this story has not heard these instruments many times. This story tells us the whole story of the great invention—how the invention came to be, how records are made, and how they can reproduce for us so marvelously. It also tells how the instrument is used in business offices as well as a means of amusement.

THE TALKING MACHINE

“DADDY, what makes it talk?” In one form or another that question has been asked by every boy and girl who has heard the modern talking machine, by whatever name it is called, pour forth the golden tones of one of the great operatic artists, or listened to the music of one of the great bands or orchestras.

We all know from our reading in THE BOOK OF KNOWLEDGE, that sound consists of a number of regular vibrations of the atmosphere, striking with a given force, and at regular intervals, the little membrane of the ear, called the tympanum, or ear-drum, causing this little membrane to make an equal number of vibrations to those set up in the atmosphere by the voice of the singer or the notes of the instruments. These vibrations are translated by our brains, but no one can tell how it is done.

In a talking machine record, these sound vibrations are recorded in a permanent form by the use of what is called a diaphragm, which is affected by the vibrations in the atmosphere in a way similar to the effects upon the ear-drum. To this diaphragm of the talking machine is attached a little needle which is called a recording stylus. As the diaphragm of the talking machine is set in motion by the vibrations, this motion is imparted to the little needle or stylus, causing it

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to move from side to side according to the volume or intensity of the sound communicated to the diaphragm. A soft wax-like tablet or disc is placed on the recording machine, in contact with the little recording needle, and as the stylus is moved by the vibrations of the diaphragm it cuts into the soft material of the disc, which is rotating, thereby tracing on the surface of the wax a spiral line, which is called the sound line. Looked at with the naked eye, this sound line seems to be simply a spiral line traced over the surface of the disc, but if we examined it under a magnifying glass we could see that this spiral line has zig-zag indentations corresponding to the vibratory movements of the stylus.

The wax-like disc on which the sound line is traced is called the “master record.” When this master is secured it is put through an electroplating process, whereby a matrix is secured. This matrix is used to procure a die or stamp from which the talking machine records that are sold to the public are stamped or pressed. Many duplicates can be made from this stamp, and this is why they are comparatively cheap.

In reproducing or repeating these sounds, the operation is reversed. In place of the stylus, a reproducer is used. The sound line on the disc sets in motion the reproducer and causes

it to impart to the diaphragm the movement indicated by the irregular sound line, and this movement against the diaphragm sets up in the atmosphere the vibrations made by the singer or the band. The machine gives back what it has received.

While scientists had known for many years that it was possible to record sound vibrations, the first practical machine patented was in 1877, by Thomas A. Edison. With his instrument it was possible not only to record the sound vibrations, but for the first time, by simply reversing the machinery, to "make it talk." People were very excited over this wonderful invention, and believed that great things would come of it. The inventor, himself, saw its possibilities for a number of other applications, several of which—such as the telescribe—have taken many years to realize.

The chief reason why the talking machine was for a long time looked upon as an interesting toy rather than a wonderful machine was because the tinfoil wore off the record after a few repetitions. In 1885, Bell and Tainter patented a talking machine which used a wax cylinder for the record. Much of the work in this machine was done by Alexander Graham Bell, the inventor of the telephone, Chichester Bell and Charles Sumner Tainter, and the experiments and investigations leading up to the patent were conducted in the Bell laboratories near Washington, D. C.

The next stage in the development of the industry was the invention of a spring motor for operating the talking machine. Originally talking machines were operated by storage batteries. This was a great inconvenience and made the machines too expensive for ordinary use. By the invention of the spring motor, or clockwork motor as it is sometimes called, it was possible to make a reliable talking machine which could be sold at a reasonable price. This was indeed an important step in the development of the art, and here also the United States claims the credit because the inventor of the clockwork model was Thomas Hood MacDonald, a citizen of the United States.

Mr. MacDonald was a very busy inventor, especially in connection with talking machines, and he contributed a number of other valuable inventions to

the art of sound recording and reproducing. The MacDonald Graphophone Grand patent disclosed that a particular speed for the surface of the record must be obtained in order to secure the best results, and this Graphophone Grand patent was largely instrumental in the development and enrichment of the art.

Originally the cylindrical form of record was the only one known, but later the disc record came into use. The disc or flat record is the one now most popular and this form of record is based upon a patent to J. W. Jones. This is also a patent granted by the United States Patent Office, and it covers a process for recording sound in the form of a disc talking machine record and marks a stage in the development and evolution of the art of recording and reproducing sound.

Dozens of men have worked to make improvements on these machines, and they have grown better and better all the time until now it seems as if there could be no other very great improvement. The best machines can give us back the music of a great orchestra, faithfully reproducing the sound of the instruments as they blend together, or we can get the voice of a great singer, or a conversation. The first machines had a metallic sound, but the best ones now have little or none of this, but are mellow and sweet. There are several different machines on the market, called by many different names, such as phonograph, graphophone, and gramophone. All of these names are made from the Greek words which mean to write down sound. Then some are called by special names, as Grafonola, Victrola, Sonora and the like. These names are to distinguish them from the machines of other manufacturers.

The talking machine, or phonograph, was soon very popular, because of its powers of amusement in producing music, songs and speeches. Disc instruments that were made simply to reproduce without recording were sold in large numbers, and the cylinder machines began to go out of use, as the others were so much more convenient.

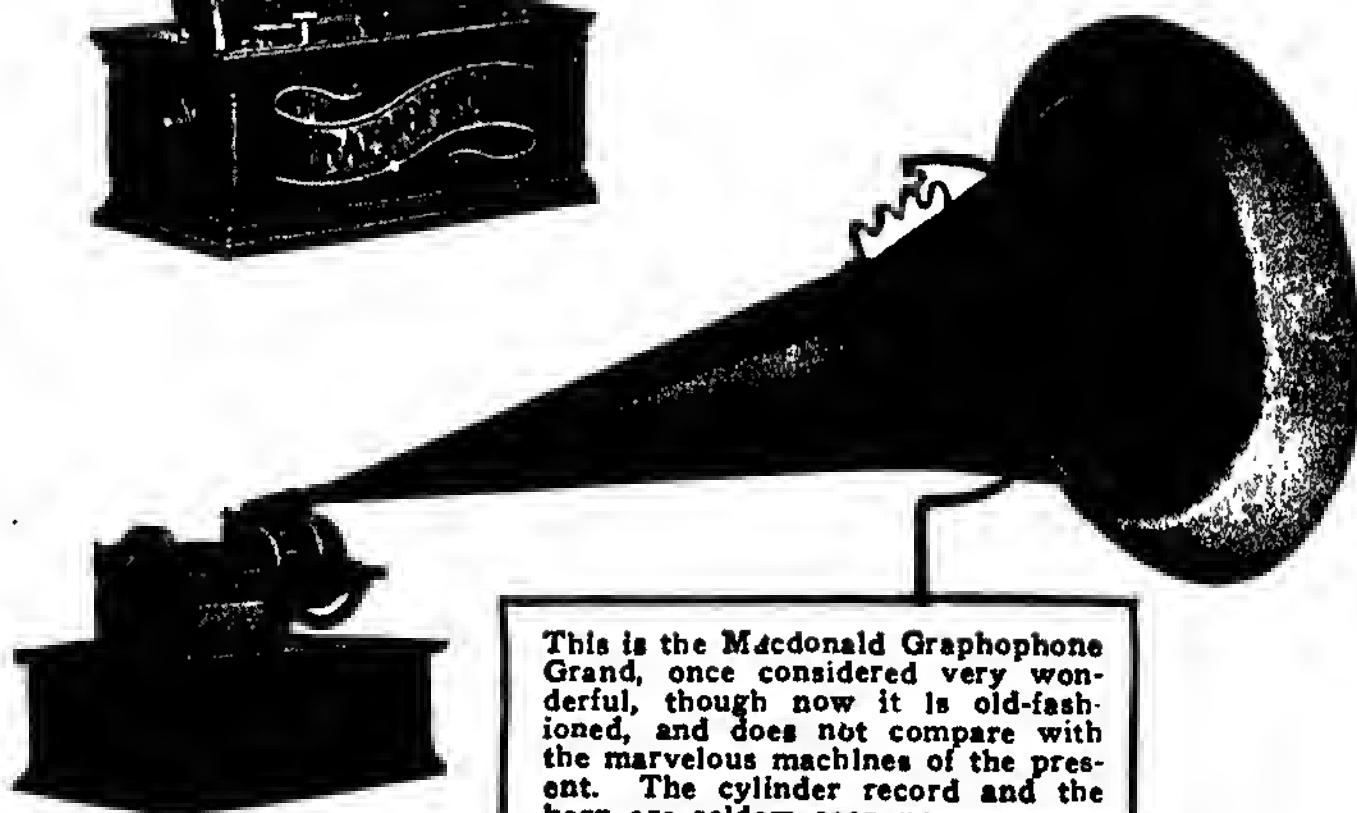
The manufacture of records has become a vast industry, and endless care is required to maintain a standard that will adequately reproduce good voices and orchestras. Hardly a place now is so isolated that its inhabitants cannot enjoy the world's great operas and other

SOME EARLY TYPES OF TALKING MACHINES



This is one of the earliest machines made with a spring motor, which ran at uniform speed. It was a great improvement on the treadle.

When the graphophone was invented there were no electric or spring motors. The first machine was attached to the table of a sewing machine, and was made in a sewing machine factory.

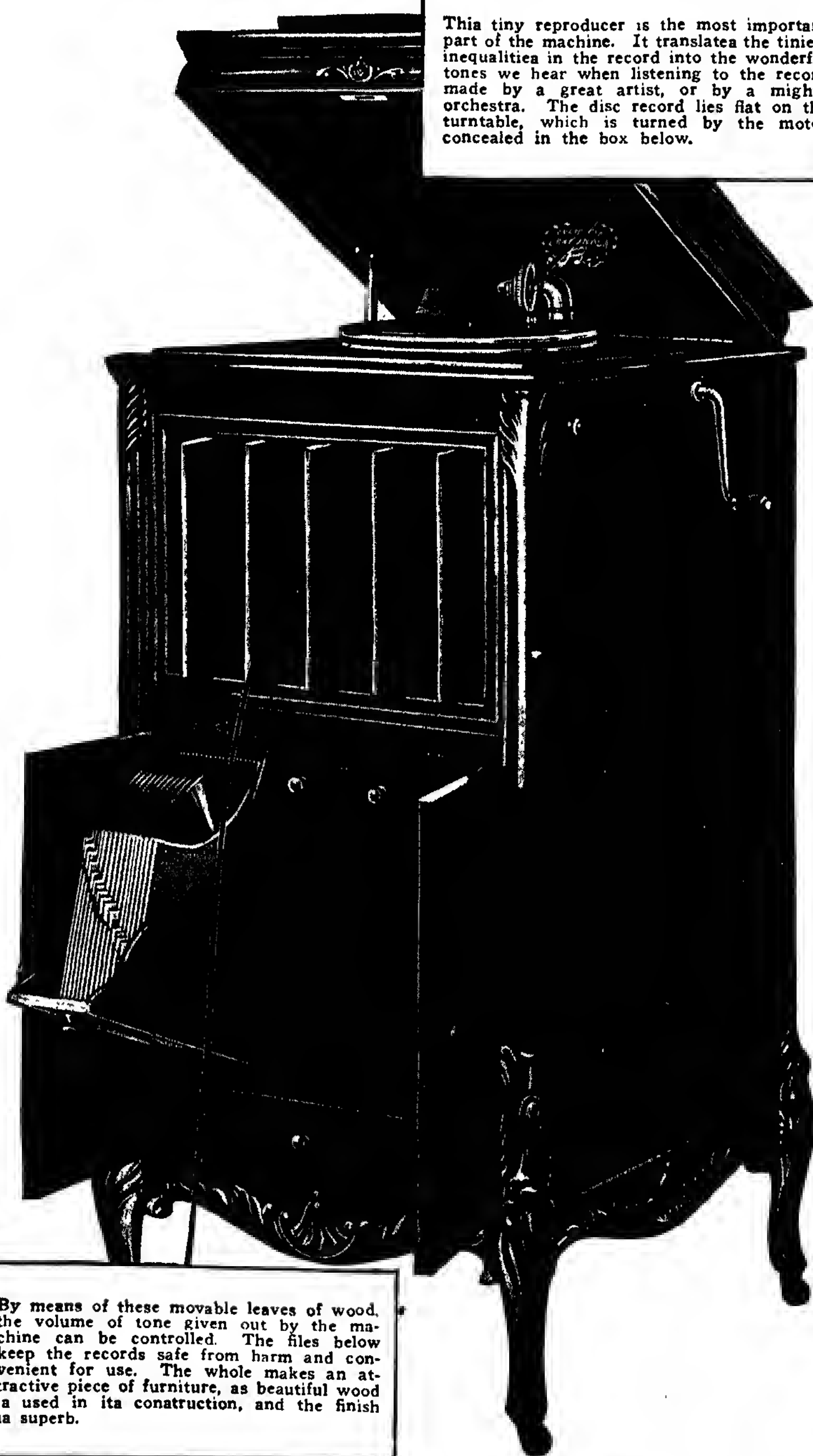


This is the Macdonald Graphophone Grand, once considered very wonderful, though now it is old-fashioned, and does not compare with the marvelous machines of the present. The cylinder record and the horn are seldom seen now.

Here are some early talking machines. The great difficulty at first was motive power, and not until the spring motor, the speed of which could be controlled and kept uniform, was developed, was progress possible.

THE LATEST TYPE OF TALKING MACHINE

This tiny reproducer is the most important part of the machine. It translates the tiniest inequalities in the record into the wonderful tones we hear when listening to the record made by a great artist, or by a mighty orchestra. The disc record lies flat on the turntable, which is turned by the motor concealed in the box below.



By means of these movable leaves of wood, the volume of tone given out by the machine can be controlled. The files below keep the records safe from harm and convenient for use. The whole makes an attractive piece of furniture, as beautiful wood is used in its construction, and the finish is superb.

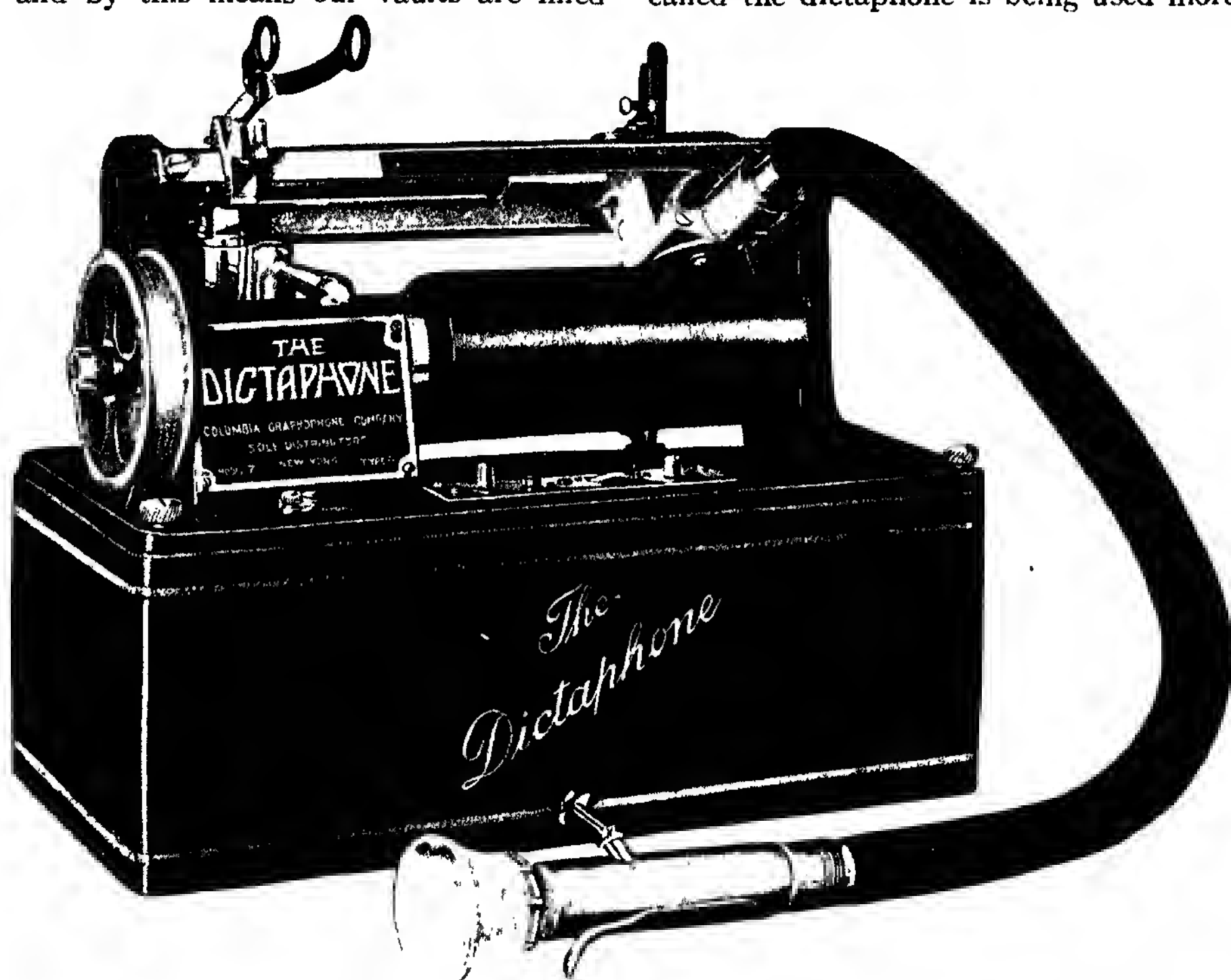
A Modern Talking Machine Which Faithfully Reproduces Conversation, Singing, or Orchestral Music.

TALKING MACHINE

beautiful music. A more serious use of the phonograph—as a record of the voices of distinguished men and women—has been made in many countries. The United States, Austria, England and France have each such collections for the benefit of the generations to come. By this means the artist is given immortality, and by this means our vaults are filled

gymnastics and dancing can be had at any time without an extra teacher to play for the drills, or without keeping one of the party at the piano, and the phonograph never tires.

The talking machine is not only a joy in the home, but is also useful in the business office as well. An instrument called the dictaphone is being used more



One using the dictaphone starts the machine and speaks in an ordinary tone of voice into the tube. The sound waves strike the diaphragm, and the needle makes a delicate line on the wax of the cylinder as it turns. The business man can dictate letters whether his stenographer is at hand, or out of the office. All pictures by courtesy of the Columbia Graphophone Company.

with a vast store of artistic and historical material.

You can realize how great must be the sale of these records when you are told that great singers receive sometimes as much as \$100,000 in a year for their part of the money received from the public, and many receive as much as \$10,000. Some of the large manufacturers have their own orchestras or bands, so that they may always be ready to make records of new music when desired.

Few inventions have given so much pleasure to so many people. Not only can good music of every kind be heard in the smallest village, but music for

and more, and saves much valuable time. We show you the pictures of this which will explain how it works better than we can do in words.

A wax cylinder is put on, and the machine is started. The man talks his letter into the tube which you see, and as he talks, everything he says is cut in a tiny line on the wax surface. The cylinder will hold perhaps a dozen letters before it is full. When the man is done he stops the machine.

When the typist is ready to write the letters, she can come to this same machine, push a little lever, put two tiny tubes in her ears, and the machine will

give back to her exactly what has been said. She then strikes the keys of her typewriter, and soon the letter is written. She can make the machine go as fast or as slow as she wishes, and can make it repeat any part as often as is necessary. In large offices, different ma-

them at her convenience. When a cylinder has been filled, and the letters have been written, a thin film of wax is shaved off the surface, and it is ready for use again. A cylinder can be shaved perhaps a hundred times.

The talking machine of to-day is dis-



The employer has spoken his letters into the dictaphone, and gone. The cylinder is taken to the typist, who puts it on her machine, puts two small rubber tubes connected with the diaphragm into her ears, and starts the machine. It speaks distinctly, but so gently that one sitting beside her cannot hear what it says. She can make the machine go rapidly or slowly, or can make it repeat any number of times.

chines are used for dictation and for reproducing.

You can see the many advantages of this machine. The stenographer may be busy or out at luncheon when the employer wishes to dictate, or the employer may think of a letter he wishes to write after every one else has gone home. He can talk his letters into a dictaphone, giving full directions, and even spelling strange words, and the typist can write

tinctly of United States origin. It was first produced in the United States, by United States citizens and by United States manufacturers. Its every growth and development has been the result of tireless work on the part of American inventors and American manufacturers, and it stands to-day as a monument to American inventive ability and American manufacturing skill.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5687.



Ploughing in the New West.

THE NEW WEST

CANADA, extending from the Atlantic to the Pacific, is more than equal in size to the United States and covers an area of 3,729,000 square miles—one-twelfth of the land surface of the earth. Of all the countries now in the stage of development, none attracts more attention than the Canadian Northwest. This vast inland empire stretches from the Rocky Mountains on the west to the wooded country of New Ontario on the east, and from the American boundary to a point yet to be determined on the north. The provinces which make up this area are vast plains, three times the size of the German Empire and five times larger than Great Britain and Ireland. The whole area is watered and drained by three great river systems. The rivers make one vast network of intersecting valleys. The provinces, Manitoba, Saskatchewan and Alberta, on account of the productiveness of their fertile prairies, are called the Granary of the Empire.

THE CLIMATE OF THE WESTERN PRAIRIES

Many people have wrong impressions regarding the climate of this western country. It will be interesting

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to know that Edmonton has as high an average temperature as St. Paul, fifteen hundred miles south. Further, Northern Michigan and Manitoba have similar temperatures, and as we go north and west the influence of the winds from the Pacific has a marked effect in modifying the climate. The Peace River valley, seven hundred miles north of the American boundary, has for the past twenty years grown a superior quality of wheat.

The soil of this great grain belt, although of the richest loam, would never have been so productive had it not been for the climate. The blessings of the climate are threefold. They consist in pure air, cool temperature and low precipitation. The pure air prevents too rapid decay of the vegetable matter in the soil and thus prevents a great amount of waste. This is one explanation of the great fertility of the soil. The cool temperature of the summer nights is responsible for the large relative yields of wheat. Raise the temperature of the summer days and nights and the yield of grain will be proportionately reduced. The cool temperature is one of the agricultural glories of the land. The rainfall

is sufficient to grow the crops, and not heavy enough to destroy them when grown. Nearly every portion of the wheat belt has a rainfall of fifteen or twenty inches; enough to grow good crops on land that is properly cultivated.

PIONEER DAYS IN THE NEWEST WEST

Until the close of the last century, few men went into the Hudson's Bay Company's country except trappers and hunters. Many people, who are still young, remember when the land north of the Canadian Pacific Railway was considered the fur-trader's world, a world of adventure, of chance and of danger. Fearing the mystery and cold of the northland, the pioneers clung to the south and settled near the boundary line. This gave impulse to Regina, Moose Jaw, Calgary and Lethbridge. When it became known that the climate of the north was tempered by warm Chinook winds and that the soil was very fertile, the great wave of population broke its barriers and poured into the fertile valleys of the north.

From the point of development the West is only in its first infancy; out of 200,000,000 acres of wheat land, only 10,068,100 were under cultivation in 1916. Nearly all of this land has been cultivated for the first time since 1898, for before that time the wheat-growing possibilities were not recognized. In spite of this small acreage Canada occupies the fifth place among the wheat-producing countries of the world. It does not require a great imagination to see Canada wresting from the United States her place as the world's greatest wheat-producing country. This will follow as soon as the remaining millions of Canada's fertile acres are brought under cultivation—a result which is only a matter of time and development.

THE RAILROADS THROUGH THE GREAT WEST

The trend of settlement follows the construction of railroads. At present, there are three great systems, the Canadian Pacific, the Grand Trunk Pacific and the Canadian Northern. Every year, these systems build hundreds of miles of new road, opening up to the settler tens of thousands of acres of new wheat lands. The time is not far distant when the whole wheat belt will be one great network of railroads.

MANITOBA, THE OLDEST PRAIRIE PROVINCE

Manitoba is the most easterly of the prairie provinces. The first settlement was made in 1811 at Fort Garry, by Lord Selkirk's colony of Scots. Colonization was slow and when Manitoba became a province in 1870, its population was only 1,700. In 1911, the population had increased to 455,614.

The province has an area of 251,832 square miles with a considerable part in water surface, as Lakes Winnipeg, Manitoba and Winnipegosis are within its boundaries. Its eastern part is thickly wooded, sparsely settled, but rich in mineral wealth. The south, a level, fertile prairie, is thickly settled and has the appearance of the old established provinces of the East. The rich rolling country of the west and north is in places only sparsely settled. Of the arable land only about one sixth has been brought under cultivation.

All of the towns and most of the villages possess telephone and electric light plants. The province has an excellent public school system. The winters are cold but as the air is pure and dry a person does not mind them as much as those of the East.

"Manitoba hard" wheat is famous in the markets of Europe. The deep rich loam of the prairie produces the flinty kernel so much prized by millers. The wonderful thing about the soil is that its fertility lasts. There are old farms that have been cropped for over thirty years and still produce as regularly as the changing seasons twenty bushels per acre of the finest hard wheat. For many years Manitoba was treated exclusively as a wheat-growing country but now dairying and stock-raising are attracting much attention.

WINNIPEG, THE WONDER CITY OF THE WEST

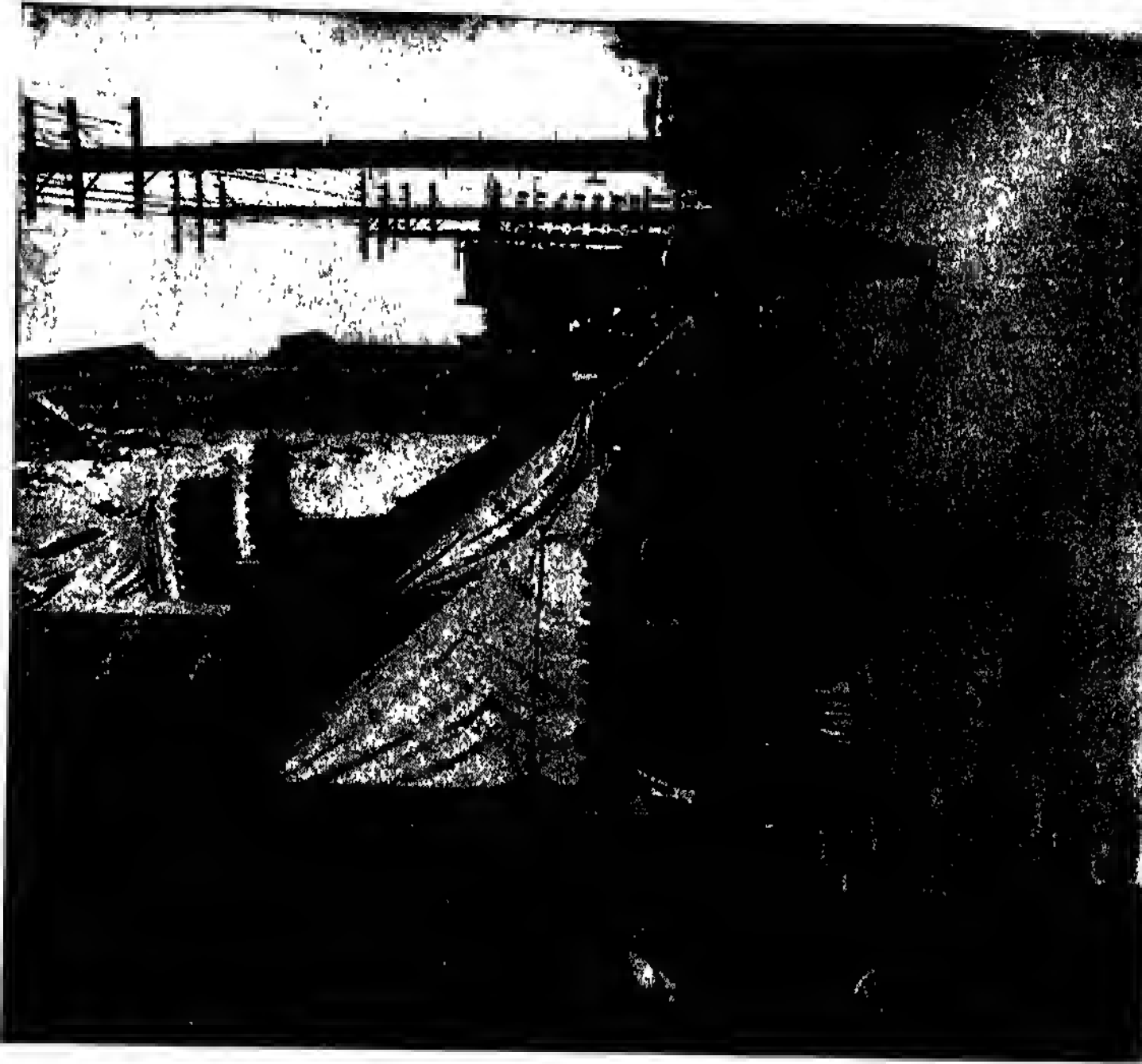
No other city of its age and size has been advertised throughout the world so much as Winnipeg, the capital of Manitoba. The city has risen where once old Fort Garry slumbered. Scarcely more than a generation ago it was the great fur-trading post of the Hudson's Bay Company. Its population increased from 1700 in 1870 to 136,035 in 1911, and during that period this small hamlet grew to be the third city in the Dominion in size and in volume of business.

THE BUFFALO VANISHES AND THE CITY COMES



The American buffalo, or more properly bison, is almost extinct, though millions once roamed the prairies. A small herd still exists in Alberta, and sometimes rumors that thousands exist further north in the unexplored country are heard, but seem to lack foundation.

Photographs copyright by H. C. White Co



It is hard to believe that this city of Winnipeg with all the modern improvements, including tall buildings, did not exist forty years ago. Then there was only a little village around Fort Garry, which was only a fur trading post. Now it is one of the busiest and most prosperous cities in the western world.

Winnipeg is the commercial centre of the West. As a wheat-shipping point it exceeds Chicago and Duluth. The city is the distributing centre for the wholesale and jobbing trade and every branch of business is represented. All the principal banks have branches and as a manufacturing city it ranks third in Canada. There are extensive stock-yards and immense abattoirs for slaughtering cattle for shipment to Europe and other markets. The yards of the Canadian Pacific Railway contain one hundred and twenty miles of track and are the largest in the world operated by one system. The city is the great railroad centre of the West. The three great railway systems radiate from it and connect the city with the East and the West, and it is the starting point of the new railway to Hudson Bay.

Winnipeg is the most cosmopolitan city in Canada. Less than one-half of the population are Canadians and over thirty different languages are spoken on the streets. Icelanders have taken the foremost place among the adopted peoples. They have forged to the front in colleges and the university, and in 1909, an Icelandic student was chosen as Rhodes scholar. The Scandinavians, industrious, honest and thrifty, have proven to be the best immigrants in Canada. The Galicians are the most troublesome of the foreigners.

The city has splendid educational facilities. The public school system embraces grammar, high and normal schools. Several colleges and the University of Manitoba give an excellent opportunity for the study of the higher branches. In order to assist in molding the foreigners into good citizens a very efficient night school system is maintained.

Brandon, a very attractive city of fourteen thousand people, is situated on the Canadian Pacific Railway, one hundred and thirty-three miles west of Winnipeg. The city is surrounded by a magnificent wheat country and is the distributing point for all kinds of goods. With large business blocks, fine churches, and residences it compares very favorably with Eastern cities.

THE BRACING CLIMATE OF THE PROVINCE OF SASKATCHEWAN

Saskatchewan, first constituted a province in 1905, is the central agricultural

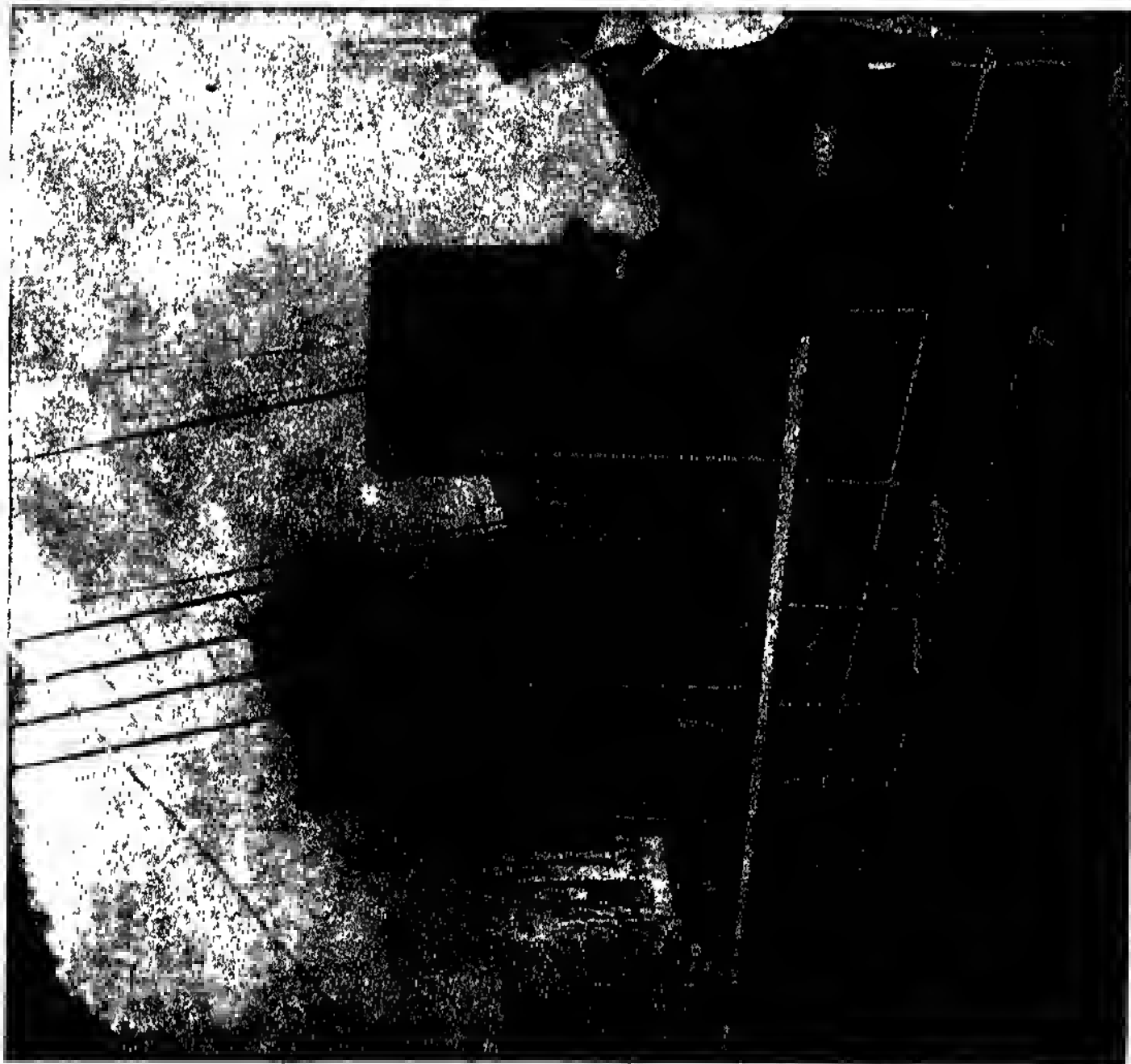
province of the West. It lies between the American border and 60th parallel of north latitude and between 102° and 110° longitude. This great rectangle contains 250,650 square miles, of which a large part is capable of producing the finest quality of wheat. The people of Saskatchewan boast that the whole population of the Dominion could live in comfort within the borders of the province.

The days in summer are long, bright and hot, but the nights are delightfully cool. The air is pure and dry, so a person does not mind the heat. The winter, which sets in about the first of December, continues without interruption until the end of March. The snow-fall, however, is not nearly so heavy as it is in Montreal. June and July, the two great growing months, are the wettest of the year. During these months, the rainfall is just sufficient to furnish moisture for the growing crops. The province lies in the same latitude as the British Isles, Denmark, the Netherlands and Belgium. Edinburgh, Scotland, is farther north than any of the settled parts of Saskatchewan, and Petrograd, Russia, is in the same parallel of north latitude as the northern boundary of this prairie province.

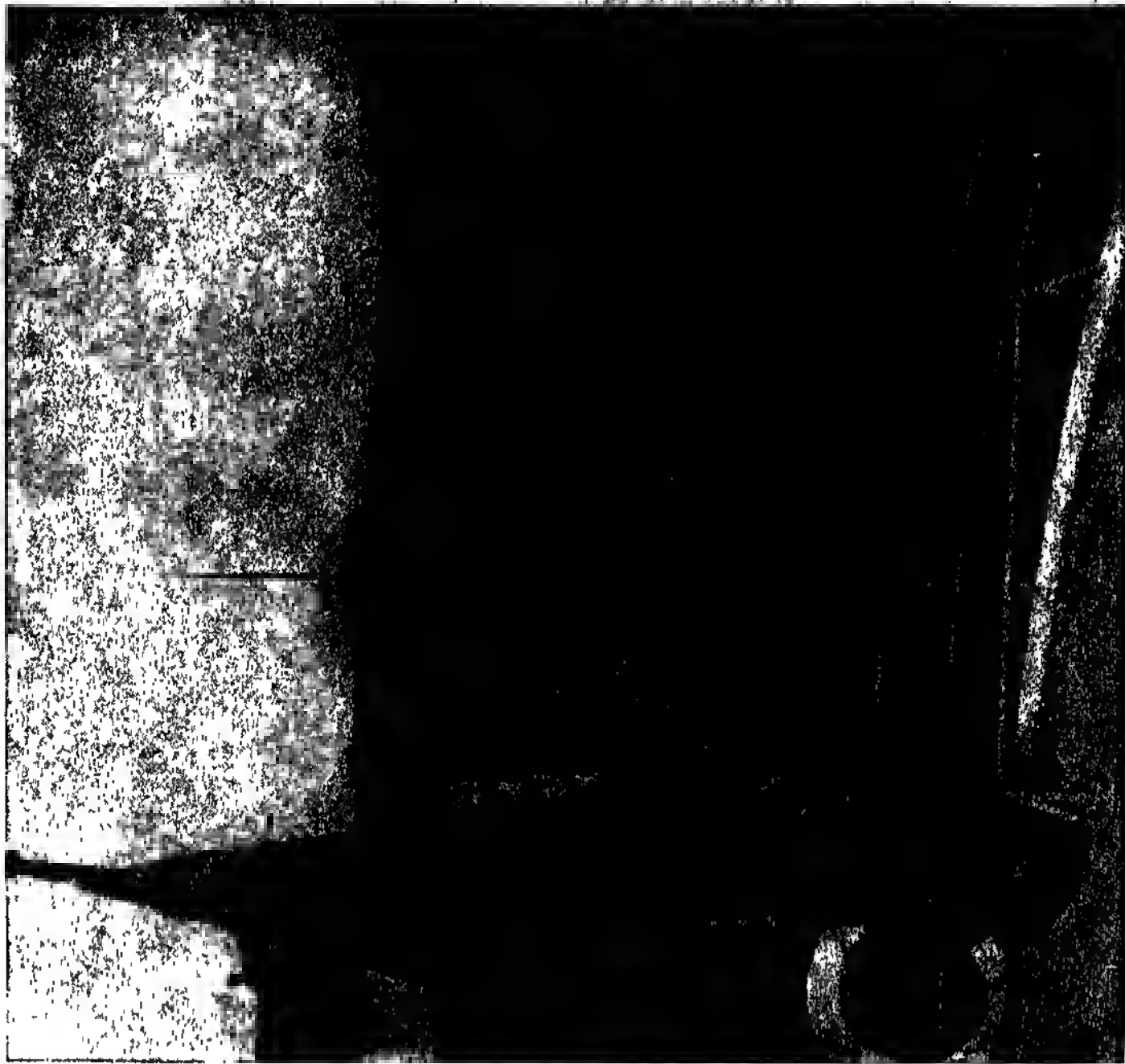
Miles of railroad are every year being built through the province and thousands of acres are added to the cultivated area. Not only wheat but all kinds of grains are raised. Cattle-raising is an important industry and dairying is commencing to attract attention. There is an abundance of coal through the north and many other minerals have been discovered. The north has valuable forests and the rivers and streams are filled with all kinds of fish.

Regina (30,213), the capital, and Moose Jaw (13,823) are flourishing cities on the main line of the Canadian Pacific Railway. They are surrounded by a fine wheat country and are growing rapidly. Saskatoon (12,000), a city of not many years' growth, is on the main line of the Grand Trunk Pacific. It is the seat of the Provincial University and the chief distributing point for a large section of the country. Prince Albert (6,254), near the centre of the province, on the Saskatchewan River and a branch of the Grand Trunk Pacific, is a rapidly growing town. The province has a College of Agriculture and every effort is made to diffuse a knowledge of good farming.

THE GATEWAY OF THE WEST



Wherever you go in Central and Western Canada you will realize how important the wheat crop is. These tall towers beside the boat are the grain elevators which raise the wheat so that it can be handled more easily. This picture was made at the town of Owen Sound on Lake Huron. Still larger elevators than this have been built in other towns on the lakes.



We have told you a great deal about canals in this book. Here is one of the important waterways of the New World. It is the Sault Ste. Marie Canal between Lakes Superior and Huron. The river which connects these two lakes is not safe for boats and this canal was built. Through it much of the commerce of the West passes.

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ALBERTA, THE SISTER PROVINCE OF SASKATCHEWAN

Alberta, first made a province in 1905, is larger than either Germany or France. It has an area of 255,285 square miles and a population of 374,663. The province lies between the American boundary and the 60th parallel, while on the east and the west it is bounded by Saskatchewan and British Columbia.

Southern Alberta is an ideal ranching country. It was the winter home of the buffalo and is now the region of large ranches, though as population increases they are being broken up into farms. Around Calgary the rainfall is not sufficient for regular crops; it is an open, treeless prairie covered with wild grasses. At present much of this land is irrigated and bountiful crops are produced. The southeastern part of the province is valuable wheat land.

The climate is always dry in winter. The snowfall is light and lies dry as sand under the feet. The air is clear and the sun is bright throughout the winter days. Spring is early; it opens at Edmonton about the same time as it does at Toronto, Ontario. In summer, the days are hot and the nights are always cool.

Horses and cattle run out all winter, unhoused and unfed. In the East, the grass, if left uncut, seeds, then decays and becomes worthless in the rain; but in the Northwest, the prairie grass is self-cured by the dry weather of the fall and is just as good as standing hay. The winds blow off the light falls of snow and uncover the food for horses and cattle. This makes Alberta the ideal country for ranching.

The climate is greatly influenced by the Chinook winds. These are warm, dry winds which blow with considerable force from time to time through the winter. They evaporate every vestige of snow from the prairies and take the snow without leaving a trace of dampness on the smooth surface of a stone. Their influence is felt as far east as Regina and far to the north but is most pronounced in Alberta.

THE NATURAL RESOURCES AND PROGRESSIVE CITIES OF ALBERTA

The northwest corner is true forest land while through the centre and parts of the north there are tracts of dense woods. A large part of the province is

underlaid by coal beds, yielding coal in quality from lignite to anthracite. Gold in paying quantities is found in the northern part and also galena and silver. Natural gas and petroleum have been discovered in many places, and other minerals will likely be found.

Calgary (43,704), a well-built city, and the commercial metropolis of the middle west, is situated on the main line of the Canadian Pacific Railway. The Rocky Mountains are visible on the western horizon. The city is a great manufacturing place as well as the distributing point for a large area of country.

Edmonton (24,900), the capital of the province, is situated on the Saskatchewan River. This city, which in 1901 was a small trading post of the Hudson's Bay Company, is now a large manufacturing centre. The Grand Trunk Pacific Railway passes through it, and it has become the chief distributing centre for a large, fertile country. Across the river is Strathcona, a flourishing city and the seat of the Provincial University.

Medicine Hat (5,608) is located to the east of Calgary on the Canadian Pacific Railway. It has natural gas and is rapidly becoming a great manufacturing town. Lethbridge is the centre of an extensive coal-mining district. The largest coal mines in Western Canada are located here. Added to these cities, the province has more than a score of new towns varying in size from fifteen hundred to two thousand people or more. A few years ago the sites of many of these towns were virgin prairies.

These three prairie provinces form the new West. This vast empire contains millions of acres of the finest agricultural and grazing lands and only a small per cent. has as yet been brought under cultivation. The development of these provinces is one of the remarkable events of the twentieth century. With such undeveloped resources is it a wonder that no other country is receiving such attention? Settlers from all parts of the world have come to till these virgin prairies, and over half a million of immigrants from the United States have crossed the line into Canada. Towns have sprung up in a night and in a year have become full fledged cities. It seems, the prophecy that the twentieth century belongs to Canada will be fulfilled.

THE NEXT STORY OF CANADA IS ON PAGE 5777.

TWO THRIVING WESTERN CITIES

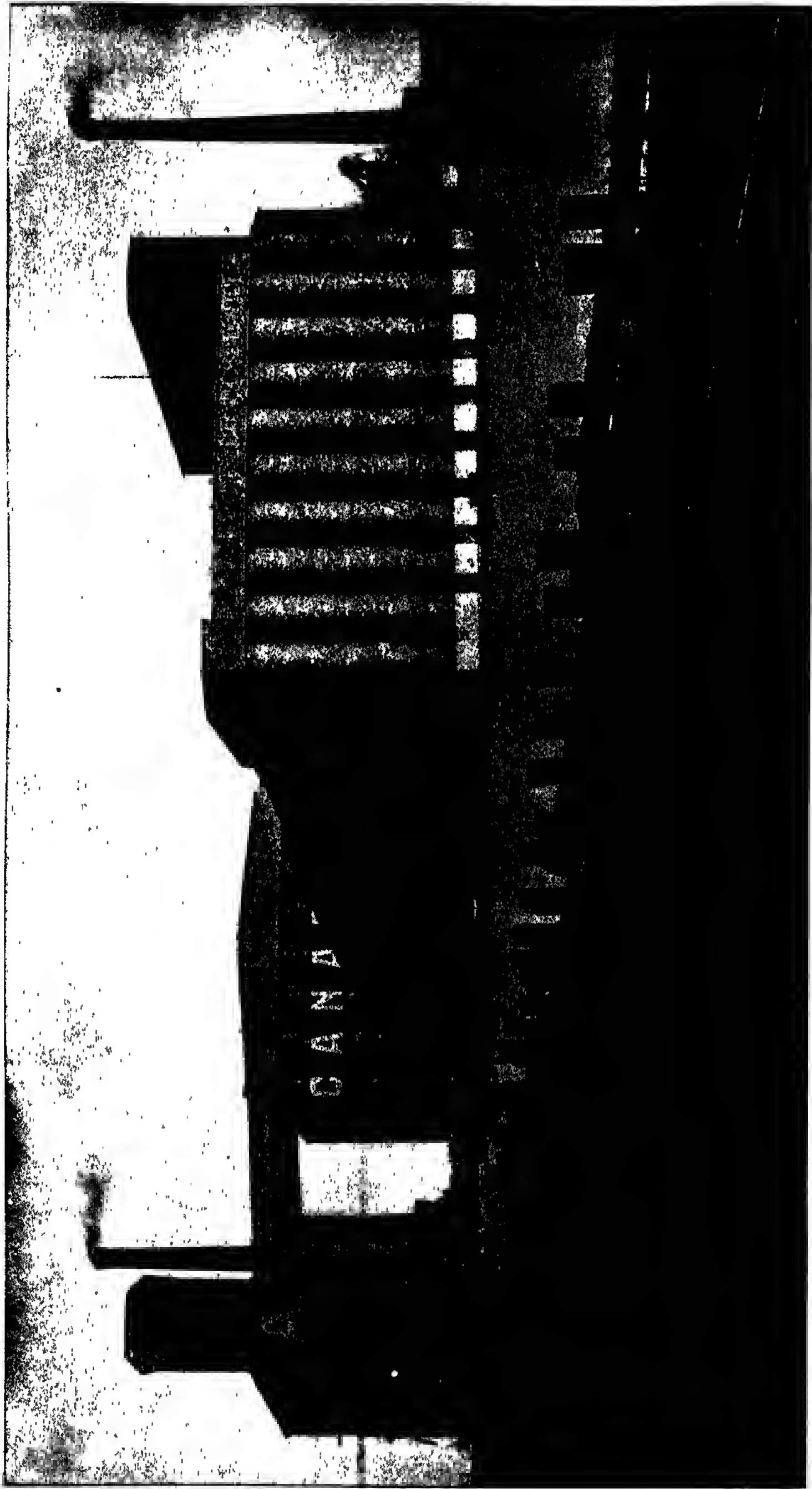


This is part of a beautiful park which lies close to the business section of Calgary and ensures a breathing space to that part of the city. The statue in the centre of the picture was erected in memory of the soldiers from the city who fell in the Boer War, and represents a trooper in the Strathcona Horse. The statue was made by Louisa Philippe Hebert, who also made the statue of Maisonneuve in Montreal.



The chief business thoroughfare of Vancouver is Hastings Street, which is here shown. The growth of Vancouver dates from 1885, but the town was destroyed by fire the next year. The manufacturing interests are large and increasing, and as a place of residence it has many advantages. The harbor is safe and deep, and the city is likely to become one of the great ports of North America in the future.

THE CANADIAN NORTHERN ELEVATOR AT PORT ARTHUR, ONTARIO



This elevator holds 10,000,000 bushels of grain and each one of the huge, cylindrical, concrete bins holds several thousand bushels. It is called an elevator because the wheat is elevated, or raised, to the top of the building before it is dropped into the bins. Wheat is stored here until it is sold. In the picture you see where the cars are run into the elevator. The grain is taken from the cars to the top of the building in hoppers and there weighed and distributed to the bins. Six hundred cars, averaging 1,000 bushels each, can be unloaded in one day. When the wheat is shipped, it is taken from the bottom of the bin, elevated to the top of the building, weighed, and spouted into the hold of a lake vessel. In this way 100,000 bushels can be unloaded from the elevator in one day.

The Story of FAMOUS BOOKS

WHAT THIS STORY TELLS US

THE life of Philip Nolan is told so simply and so well that many have believed that it is a true story. While no such punishment was ever given to an American officer, Reverend Edward Everett Hale, the author, has truthfully described the feelings of a man cut off from home and country by his own act. The story was written in the dark days of 1863, when there were many disloyal persons in the North, and it was written as a warning. The tale is told by a very old naval officer, who is recalling events that happened long before, when he was a very young man. Every boy and girl should read the little book.

THE MAN WITHOUT A COUNTRY

PHILIP NOLAN was as fine a young officer as there was in the "Legion of the West," as the Western division of our army used to be called. He was stationed for a time at a fort on the Mississippi. One day there arrived at the fort a fascinating stranger of courtly manners and handsome figure. It was Aaron Burr, whose term as vice-president of the United States had just expired. Burr noticed Nolan, talked to him, walked with him, and, in short, fascinated the young officer. When he went on his way, the joy seemed to have gone out of life for Nolan. The soldier's life now became tame and wearisome. Sometimes he wrote to his idol, long, high-worded, stilted letters, written and rewritten and copied. But never a line did he have in reply, and the other young officers in the garrison laughed at the time that he spent in this way.

But one day Nolan had his revenge. Burr came down the river again. Rumor said he had an army behind him, and an empire before him. What he meant to do, we do not know, but probably he was bent upon conquering Mexico, and setting up a state with himself as chief. It was a great day to poor Nolan. Burr had not been at the fort an hour before he sent for him. That evening he asked Nolan to take him out in his skiff—to show him a canebrake or a cottonwood tree, as he said—really it was to enlist

him in his cause. And he succeeded. Deceived by his charm and led away by his false promises, Nolan swore that when the time came he would obey any orders, and march anywhere.

What Burr meant to do can never be known; President Jefferson was informed of his schemes and had him arrested. A long and exciting trial for treason followed at Richmond, and among the officers who were to be tried by court martial was little Nolan. It was charged that he was sick of the service, had been willing to be false to it, and would have done anything for the cause of Aaron Burr.

The trials dragged on. The officers of higher rank escaped, but Nolan was found guilty, and he was guilty. At the close of his trial, the president of the court asked him whether he wished to say anything to show he had been faithful to the United States. Nolan, sick at heart and bewildered at the downfall of his hero, cried out in a fit of frenzy, "Damn the United States! I wish I may never hear of the United States again!" He did not know how the words shocked old Colonel Morgan, who was presiding. Half the officers who sat in it had served through the Revolution; and their lives had been risked for the very thing which in his madness he cursed so recklessly. He, on the contrary, had grown up in the West of those days, on the edge of the wilderness, with Frenchmen and Spaniards and occasional Englishmen. In

a word, to him the United States was scarcely a reality. Yet he had been fed by the United States all the years he had been in the army. He had sworn to be true to the United States. And still he damned his country, and wished he might never hear her name again.

He never heard her name but once again. From that moment, September 23, 1807, till the day he died, May 11, 1863, he never heard that sacred name again. For that half century, and more, he was a man without a country. Old Colonel Morgan called the court into his private room, and returned in fifteen minutes, with a face like a sheet, to say:

"Prisoner, hear the sentence of the court! The court decides, subject to the approval of the President, that you never hear the name of the United States again."

Nolan laughed. No one else laughed, for the Colonel was too solemn, and the whole room was hushed to a death-like stillness. Even Nolan lost his swagger in a moment. Colonel Morgan added:

"Mr. Marshal, take the prisoner to Orleans in an armed boat, and deliver him to the naval commander there."

"Mr. Marshal," continued the Colonel, "see that no one mentions the United States to the prisoner. Make my respects to Lieutenant Mitchell at Orleans, and request him to order that no one shall mention the United States to the prisoner while he is on board ship. You will receive your written orders from the officer on duty here this evening. The court is adjourned without a day."

Nolan was taken on the Nautilus from New Orleans to the North Atlantic coast, but not allowed to land. Then the Secretary of the Navy put him on board a government vessel bound on a long cruise, giving instructions to the commander of the ship. Nolan was to be confined only so closely that he could not escape; and to be provided with such quarters, rations and clothing as would be proper for an officer of his late rank. No insults were to be offered him, nor was he ever to be reminded unnecessarily that he was a prisoner. But under no circumstances was he ever to hear of his country.

At first Nolan considered his imprisonment a jest, and pretended that he was enjoying the voyage, but gradually he changed his tone. He was not lonely on the ship, for he was allowed to talk with

the officers as much as he and they liked. But no group ever liked to have him always, because his presence cut off all talk of home, or of the prospect of return, of politics or letters, of peace or of war,—cut off more than half the talk men like to have at sea. The captain always asked him to dinner on Monday. Every mess in its turn took up the invitation, and he was at different messes more or less often. His breakfast he ate in his own stateroom,—he always had a stateroom,—which was where a sentinel or somebody on watch could see the door. Sometimes when the sailors had any special jollifications, they were permitted to invite "Plain Buttons," as they called him. Then Nolan was sent with some officer, and the men were forbidden to speak of home while he was there. They called him "Plain Buttons" because, while he always chose to wear a regulation army uniform, he was not permitted to wear the army button, for the reason that it bore either the initials or the insignia of the country he had disowned.

He was almost never permitted to go on shore, even though the vessel lay in port for months, and time hung heavy; but everybody was allowed to lend him books, if they were not published in America, and said nothing about the United States. He had the foreign papers that came to the ship, sooner or later; but somebody had to go over them first and cut out any stray paragraph or advertisement that spoke of America. Often a hole in the article he was reading showed that something about the United States was on the other side.

After touching at the Cape of Good Hope, they left for a long cruise in the Indian Ocean. One of the officers got some English books from the English fleet which they met at the Cape, and among the number was Scott's Lay of the Last Minstrel which had been recently published. One afternoon, Nolan joined a circle where some of the officers were reading aloud. In his turn he took the book and read it to the others. He read very well, and continued steadily through the fifth canto, stopped a minute and drank something and then began, without a thought of what was coming:

"Breathes there a man with soul so dead,
Who never to himself hath said—
'This is my own, my native land;'"

Then they all saw something was wrong; he turned a little pale, but plunged on:

"Whose heart hath ne'er within him burned,
As home his footsteps he hath turned
From wandering on a foreign strand?
If such there breathe, go, mark him well!"

By this time the men were all beside themselves,—was there no way to make him turn over two pages? He did not seem to have quite presence of mind enough for that himself, but coloring crimson, staggered on:

"For him no minstrel raptures swell,
High though his titles, proud his name,
Boundless his wealth as wish can claim,
Despite those titles, power, and pelf,
The wretch, centred all in self—"

and here the poor fellow choked, could not go on, but started up, flung the book into the sea, and vanished into his state-room, where he stayed for the next two months without seeing a soul, save the men who brought him food. After this he grew more shy, very seldom spoke, unless he was spoken to, except to a very few friends, while his look was the nervous, tired one of a heart-wounded man.

The long voyage drew to a close; the vessel made one of the Windward Islands, and lay there for nearly a week. The crew all wondered what the delay could mean. One day the Warren came to the same place. The new ship sent letters and papers to the homeward-bound men, told them they were outward bound, perhaps to the Mediterranean, and took back poor Nolan to try his second cruise. He looked very blank when he was told to get ready. He had thought—though no one had spoken of it—that he was going home, but this was a certain sign that there was no going home for him, even to a prison.

This was the first of twenty transfers, which kept him all his life away from the country he had hoped he might never hear of again. On one of his trips, when they were in the Bay of Naples, the officers gave a great ball aboard the ship. They wished to use Nolan's stateroom for something, but disliked to do it without asking him to the ball. The captain said they might ask him, if they would see that he did not talk with the wrong people, who would give him news of home. So the dance went on, and different officers

relieved one another in standing and talking with Nolan so as to be sure that nobody else spoke to him. As the hours passed, Nolan and they grew more at ease, so much so that it seemed quite natural for him to bow to Mrs. Graff, a celebrated beauty, and ask her for the honor of a dance.

Nolan thought he had found his chance. He had known her at Philadelphia and had met her at other places. They were in a country dance, and so for a while he began with her travels, and Europe, and Vesuvius, and the French; and then, when they had worked down, and had that long talking-time at the bottom of the set, he said boldly,—though he was rather pale:

"And what do you hear from home, Mrs. Graff?" And that splendid creature looked through him. "Home! Mr. Nolan! I thought you were the man who never wanted to hear of home again!" And she walked away to join her husband, and left poor Nolan alone, as he always was. He did not dance again.

During the War of 1812, the vessel on which he was living met a British ship. A shot entered a port and took down the officer of the gun himself, and several of the gun's crew. As the men who were not killed picked themselves up, Nolan appeared in his shirt-sleeves, with the rammer in his hand, finished loading the gun with his own hands, aimed it, and bade the men fire. And there he stayed, captain of the gun, till the enemy struck. The commander walked forward to encourage the men, and Nolan, touching his hat, said, "I am showing them how we do this in the artillery, sir." And the commander said, "I see you do, and I thank you, sir; and I shall never forget this day, sir, and you never shall, sir."

The commander mentioned him in his report. He even wrote a special letter to the Secretary of War, asking that Nolan might be pardoned; but nothing came of it, and the prisoner continued his weary life in almost every sea and yet almost never on land. He was not idle, but occupied his time very methodically, reading just five hours a day, and for two hours writing in his note-books on what he had read. Then for amusement he studied Natural History for two hours a day more. The men used to bring him birds and fish, but on a long cruise he had to satisfy himself with centipedes, cock-

roaches, mosquitoes and the like. These nine hours made Nolan's regular daily "occupation." The rest of the time he talked or walked. Till he grew very old, he went aloft a great deal, and always kept up his exercise. He was never ill himself, but if any other man was ill, he was the kindest nurse in the world, and if anybody was sick or died, or if the captain wanted him on any other occasion, he was always ready to read prayers. He read beautifully.

On one occasion his ship overhauled a dirty little schooner which had slaves on board. The officers freed the negroes, but were in need of some one who could speak Portuguese and thus quiet the poor wretches. Nolan said he could interpret and the captain fitted out a boat and sent him over.

"Tell them they are free," said the officer in charge, "and tell them that these rascals are to be hanged as soon as we can get rope enough."

Nolan explained and the negroes went nearly wild with delight, kissing his feet, and worshipping the other officer as the god of the occasion.

"Tell them," said Vaughan, well pleased, "that I will take them all to Cape Palmas."

This did not answer so well, and they all clamored eagerly for something else. Vaughan was rather disappointed and asked Nolan eagerly what they said. The drops stood on poor Nolan's white forehead, as he hushed the men down and said:

"He says, 'Not Palmas.' He says, 'Take us home; take us to our own country; take us to our own house; take us to our own children and our own women.' He says he has an old father and mother who will die if they do not see him. And this one says he left his people all sick and paddled down to Fernando to beg the white doctor to come and help them, and that these devils caught him in the bay just in sight of home, and that he has never seen anybody from home since then. And this one says," choked out Nolan, "that he has not heard a word from his home in six months." Vaughan himself grew gray as Nolan struggled through this speech. Even the negroes stopped howling as they saw Nolan's agony and Vaughan's almost equal agony of pity. As quick as he could get words the commander said:

"Tell them yes, yes, yes; tell them they shall go to the Mountains of the Moon, if they will. If I sail the schooner through the Great White Desert, they shall go home!" After some fashion Nolan said this to the men, and then, for he could not stand any more, went back to the ship. As he lay back in the boat he said to a young midshipman, who accompanied him, "Youngster, let that show you what it is to be without a family, without a home, and without a country, and if ever you are tempted to say a word or do a thing that shall put a bar between you and your family, your home and your country, pray God in His mercy to take you that instant home to His Heaven. As for your country, boy," and the words rattled in his throat, "and for that flag," and he pointed to the ship, "never dream a dream but of serving her as she bids you, though the service carry you through a thousand hells. No matter what happens to you, no matter who flatters you or who abuses you, never look at another flag, never let a night pass but you pray God to bless that flag."

So poor Philip Nolan had his wish fulfilled. He repented of his folly, and then, like a man, submitted to the fate he had asked for. He never intentionally added to the difficulty of those who had him in charge. As the years went on he aged very fast, as well he might indeed, but he continued to be still the same gentle, uncomplaining, silent sufferer, bearing as best he could his self-appointed punishment.

At last he fell ill, and allowed the doctor to come and see him as he lay there,—the first time that the doctor had been in the stateroom,—and then sent for one of the officers who was his friend. Danforth quickly obeyed the summons, and found the old man in his berth, smiling pleasantly but looking very frail. He had made a little shrine of the cabin he was lying in. The Stars and Stripes were triced up above and around a picture of Washington, and he had painted a majestic eagle, with lightnings blazing from his beak, and his foot just clasping the whole globe which his wings overshadowed. Seeing the young man's glance, Nolan said with a sad smile, "Here, you see, I have a country!" And he pointed to the foot of his bed, where was a great map of the United States as he had drawn it from memory, and which he had to look upon

as he lay. Quaint, queer old names were on it in large letters,—“Indian country,” “Mississippi Territory,” and on the Pacific shore nothing.

“Oh, Danforth,” he said, “I know I am dying. I cannot get home. Surely you will tell me something now? Stop! Stop! Do not speak till I say what I am sure you know, that there is not in this ship, that there is not in America—God bless her!—a more loyal man than I. There cannot be a man who loves the old flag as I do, or prays for it as I do, or hopes for it as I do. There are thirty-four stars in it now, Danforth. I thank God for that, though I do not know what their names are. There has never been one taken away; I thank God for that. But tell me, tell me something,—tell me everything, Danforth, before I die!”

And Danforth said, “Mr. Nolan, I will tell you everything you ask about. Only, where shall I begin?”

A blessed smile crept over his white face, and he pressed the officer's hand and said, “God bless you. Tell me their names,” and pointed to the stars on the flag. “The last I know is Ohio. My father lived in Kentucky. But I have guessed Michigan and Indiana, and Mississippi—that was where Fort Adams was—they make twenty. But where are your other fourteen? You have not cut up any of the old ones, I hope.”

So Danforth told him the names, and drew them in on the beautiful map, and in one hour tried to tell the sick man the history of half a century. He spoke of travel and the means of it; of steamboats and railroads and telegraphs; of inventions and books and literature; of the colleges and West Point and the Naval Academy; who was President and how Washington had grown. Everything that he could think of that would show the grandeur of his country and its prosperity he told him, but he had not the heart to tell him of the Civil War.

Nolan asked about all his old companions in arms and the naval officers he had known. He asked about Burr with some emotion, for his admiration had changed into passionate dislike, but said in a moment: “God forgive me, for I am sure I forgive him.” He inquired about the commander of the Western army in which he had served so long before, and wished to know if President Lincoln was the son of General Benjamin Lincoln of the Rev-

olution. When told that the President had come up from the ranks he was pleased, for he had been afraid that the office would be confined to a few families, as it had been in the early days. His curiosity could not be satisfied.

Danforth told him more. He spoke of the new Smithsonian Institution, of the new Capital, of how California and Oregon came into the Union. Nolan had suspected that there were states on the Pacific coast, for he had not been allowed to go ashore there.

And Nolan drank it in and enjoyed it as he had enjoyed nothing for fifty years. He grew more and more silent, and Danforth gave him a glass of water, but he just wet his lips, and told him not to go away. Then he asked for the Book of Public Prayer, which lay beyond him, saying with a smile that it would open at the right place, and so it did. There was his double red mark down the page by the Thanksgiving prayer for the country. And he turned to the end of the same book and showed his friend the prayer for the President and the country. “Danforth,” he said, “I have repeated those prayers night and morning, it is now fifty-five years.” And then he said he would go to sleep. He bent the officer down over him, and kissed him; and he said, “Look in my Bible, Danforth, when I am gone.” And then he was left alone. The officer thought that he was only tired, and that he would recover after a little nap. But Nolan's feeling that his end was coming, was correct.

In an hour, when the doctor went in, he found Nolan had breathed his life away with a smile. They looked in his Bible, and there was a slip of paper at the place where he had marked the text: “They desire a country, even a heavenly, wherefore God is not ashamed to be called their God, for He hath prepared for them a city.” On the paper he had written:

“Bury me in the sea; it has been my home, and I love it. But will not some one set up a stone for my memory at Fort Adams or at Orleans? Say on it:

IN MEMORY OF
PHILIP NOLAN

LIEUTENANT IN THE ARMY OF THE
UNITED STATES

HE LOVED HIS COUNTRY AS NO OTHER
MAN HAS LOVED HER; BUT NO MAN
DESERVED LESS AT HER HANDS.”

THE NEXT STORY OF FAMOUS BOOKS IS ON PAGE 5831.

JACK AT HOME IN HIS WONDERFUL HOUSE



This is a picture of Jack in his study at the top of the wonderful house which builds itself, and from this most wonderful room run the telephones and telegraphs by which Jack controls all his affairs.

The Book of OUR OWN LIFE

THE MOST MYSTERIOUS THING IN THE WORLD

WE have taken up in turn the different parts of the body and their functions.

Now we shall glance at the body as a whole at work. This fanciful comparison may help us to understand better what we have already read. This house of Jack's, "a house not made with hands," is by far the most important and wonderful and complicated and mysterious thing in the whole world. It is the most important because the thinking part of men and women cannot exist at all in this world except in such houses; the most wonderful, because it daily does with ease a thousand things which cannot be done outside it; the most complicated, because the tiniest cell which goes to make it up is itself as complicated as a great city; and the most mysterious, because it is inhabited by Jack, grows from what cannot be seen at all, and can become the parent of other houses like it. So we must try to learn what this house is, what it does, and where it comes from.

THE HOUSE THAT JACK HAS

ALL except the simplest houses are built in stories, and so is Jack's. The house itself, commonly called Jack's trunk and head, simply consists of three stories, but it is placed upon two movable stilts, so that Jack can walk about, and he has two arms with which he can help himself to what he likes when he is walking about. These four limbs are very important, because Jack's house is always wearing away and needing new material to keep it up, and, as this material does not exist everywhere, Jack must be able to move about, and also to bring the new material he finds to his house.

So our concern really is with the three stories that make Jack's house, about which we shall now tell.

But before we study them we must look at its outer and inner walls. The outer wall is made of skin, which is found nowhere else—not inside the mouth or nose, for instance. This wall is remarkable in many ways. House-painting is never required, for the wall is ever renewing its surface from within, and all Jack requires to do is to wash away the dusty outside every day. To be sure it grows somewhat dull with age and exposure to rough weather. As Jack's house is always moving, — for, waking or sleeping, he must breathe—its outer wall requires to be elastic. And so

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it is; nothing so perfect in the way of elasticity has ever been invented. But, indeed, Jack's house has hundreds of features which would make the fortune of anyone who could imitate them artificially.

It is, of course, necessary that the walls of Jack's house should be watertight. And so they are; they never let in the rain, and they may even be immersed in water altogether for as long as Jack likes, but not a drop of water will leak through from the outside.

But this is all the more remarkable because Jack uses the outer wall of his house not only as a wall and a waterproof, but also as part of his very perfect and complicated system of drainage. It need hardly be said that water must be furnished to every part of Jack's house, for, indeed, it consists of water to the extent of something like three-fourths of its whole substance. As in all good houses, there must be an efficient system of drainage for the water to escape by, and this is done in several ways, as the variety of uses for water in Jack's house is considerable. It is especially interesting that he should use his waterproof wall to let out a quantity of used water every day.

Also Jack uses his wall as one means of keeping his house equally warm by day or night in summer

or in winter—which he manages to do so wonderfully that nobody can explain it. But it is true nevertheless that somehow this wall lets out varying amounts of heat for his convenience. Lastly, all over this wall are stationed very close together countless millions of sentinels, called the nerve-endings.

The inside walls mostly consist of bones, and, by an excellent arrangement, the walls of the rooms of Jack's house are jointed on each other, so that the house can change its shape, or even move about as a whole, whenever it pleases. This moving is done by Jack's hundreds of servants, who lie along the walls, holding one wall with one hand and one with the other, and pulling them backwards and forwards as Jack desires. Jack believes in economy, however, and he has a remarkable arrangement by which he employs all these servants of his as fireplaces in addition to their other duties.

In somewhat the same way Jack is not content to use his inner walls merely as walls, for they are all hollow, and inside them, all the time, are being made millions of millions of tiny porters and policemen, called the red and white cells of the blood.

THE BUSY WORKERS IN THE BASEMENT OF JACK'S HOUSE

And now we can begin to study the three floors of which Jack's house consists. They are the basement, the middle story, and the top story, or watch-tower; these are commonly called the abdomen, the chest, and the head. A dog or a horse has a wonderful house, which is very like Jack's in many ways, but these animals have their three stories one in front of the other instead of one above the other. Jack's house is built in what is called the "erect attitude," and this enables him to use the top story, or head, as a watch-tower, far better than any of the animals can do.

The basement of Jack's house is, as we should expect, the least attractive story, but it is the largest, and Jack's house could by no means do without it. Its chief concern is with the receiving and storage, and breaking up and sending away to be burned, of the fuel, or food, with which Jack's house is kept warm, and here its various engines and pumps are run. This is a business which

cannot take a holiday, for though Jack's pumps and engines are commonly run at something like half-speed during the night, they are never allowed to stop altogether so long as Jack remains in his house, and if they did the house would at once become useless for living purposes and begin to crumble. So we can understand at once that the whole business of taking in coal, or fuel, and dealing with it, is very important. Jack cannot store very much fuel at any one time, but he can always have a supply of one kind, called fat, on the premises for an emergency, and one of the favorite places for keeping it is just inside the front wall of the basement.

HOW FRESH AIR IS DRIVEN THROUGH THE HOUSE

The middle story of Jack's house consists, above all, of the arrangements for ventilation. Ordinary houses may or may not be ventilated, and very few of them are specially built with this consideration in view; but if Jack's house were not ventilated it would fall to pieces and become uninhabitable, and thus we find that its middle story is practically filled with the two lungs, which take the fresh air in and give the spoiled air out, and with the great central pump, or heart, which drives the fresh air through the house by means of a system of tubes called blood-vessels, which go everywhere. The lungs are really bellows, and the heart, as we have said, is a pump. The essence of bellows is that they are expanded by some means and then air rushes into them. The bellows of Jack's house are expanded by the muscles, or servants, lying against and holding on to the walls called ribs, and thus enlarging this part of Jack's house every time he breathes. The central pump, or heart, is a true pump, or combination of pumps, fitted with four perfect valves which can never shut down.

WAITERS, ELEVATORS AND WATCHMEN

The blood is so marvelous a thing that we can compare it with nothing else in the world. It is a complete ventilating system, carrying fresh air in and foul air out; a complete water-supply; a complete service of waiters and elevators, carrying food to all parts of the house; a complete drainage system, carrying rubbish and litter away from the various rooms and getting rid of it;

a day and night patrol of watchmen on the look-out for burglars, such as the microbes of consumption, which frequently attempt to make an entry through the ventilating shafts, or sometimes even by the front door; and a druggist's shop, containing large numbers of antidotes to most of the common poisons.

THE BUSY SENTINELS ON THE TOP STORY

Lastly, there is Jack's top story, where he himself lives. As this is the master's apartment, situated above the others, very perfect arrangements have, of course, to be made for sending everything necessary up to it, and if we put our fingers on either side of Jack's neck we can feel the two great arteries that are always sending food and water and air and so forth up to Jack. At night Jack finds that the best way of resting all his many servants—though they never rest entirely—is to lay his house down on its side, or on its back, though that is not so good. They can in this way prepare for another day's work.

The top story is supplied with various windows and sentinels, especially the eyes, which, being much farther sighted than the sentinels in the skin, are naturally placed in the watch-tower. Other kinds of sentinels are the ears, the nose—which is also an elaborate filter for the ventilating shaft—and the tongue, or hall-porter, who closely examines everything which is admitted to the house by the front door in order to find out whether or not it has any right to come in.

JACK'S TELEPHONE

Each sentinel, like those found everywhere in the outer wall of the house, has a perfect telephone connection with Jack's study, so that orders can instantly be given in accordance with what they report.

Jack himself lives in the study, which is in the top part of his brain—where the telephone exchange is—and he is to be found behind the various windows and sentinels. His brain is itself the topmost part, or level, of what is called his nervous system, which is very much like an elaborate arrangement of electric bells or batteries, speaking-tubes, telegraph and telephone wires. This con-

trivance goes everywhere, but it is interesting to know that, like Jack's house itself, it is made of three different levels, or, we may say, has three exchanges, one above the other.

The top part of the brain is the highest exchange and is master of the other two, and there Jack lives. But the other two are very important, and the lowest, though the others are masters of it to some extent, is yet entirely responsible for what are, on the whole, the most important services of Jack's house, and will not obey even Jack himself for more than a moment. This lowest exchange is also the oldest in the history of Jack's house, and is the least easily upset if any enemies get into the house—such as microbes, or alcohol, or the poisons produced by hard work. It can go on, after a fashion, when the others have stopped working. The lowest exchange controls the bellows and pump in Jack's middle story, and its importance is due to the fact that without their ceaseless action Jack's house would be no longer habitable. You can see why it will not even obey Jack himself. If this exchange, found in a tiny place called the "bulb," be destroyed by any accident, the ventilation of Jack's house instantly ceases, the whole structure of the house collapses, and Jack, as doctors would say, "dies of asphyxia."

THE GREAT RECORD OFFICE OF JACK'S HOUSE

The middle exchange, or level, of Jack's nervous system lies at the base of the brain, and is principally concerned with receiving messages of all kinds from the sentries in the skin, and from the great sentinels which are stationed in the top story. These messages do not arrive in any complete form, but only in fragments, for each sentinel can report only what he notices. It is the business of the middle exchange to take these reports and piece together all the tiny scraps of information sent in to it piecemeal so as to make good sense of them.

The exchange can only do this by the aid of past messages, and thus the middle exchange is a great record office, not merely receiving and piecing together the messages always coming in, but comparing them with its records; and then, when they have all been collected together, corrected, and interpreted,

it sends them up by its own wires, or nerves, to the top telephone exchange.

Jack's study, of which the proper name is the neo-pallium, or new mantle, is a grey fold of brain spread out over the top of the whole, and it is quite new in the history of living beings, or, at any rate, it is not known in the earliest creatures, and is as new in the world as mankind is. This part of the brain is worthy of Jack, and is, indeed, by far the most wonderful part of his wonderful house. It contains many millions of nerve-cells, which are a curious kind of combination of electric batteries and pigeon-holes. From and to each of them there run nerves, or wires, and between all these, and between them and the lower exchanges, these wires also run.

HOW THE WONDERFUL HOUSE THAT JACK HAS REBUILDS ITSELF

But now we must come to realize that the architecture of Jack's house, though there can be no end to the study of it, is nothing more than a guide to what this incomparable house does. Every moment it is wasting away; indeed, unless it does so it is of no use. Thus, if it is to stand, it must repair itself, and this it does by daily building up into its substance certain parts of Jack's food, while the rest is burned as fuel for the heating apparatus and for the machinery that moves the walls. Nothing which has ever been made by mankind has this wonderful power, which is displayed by living things and is the mark of their life.

It is especially noteworthy that Jack keeps a large number of chemists constantly at work in his house, and they are occupied in turning the raw material, which is admitted at the front door by the hall-porter, into the special kinds of stuff of which Jack's house is made. These chemists far surpass any chemists that are known elsewhere. They can build up complicated materials from very simple ones, and this they accomplish without noise or explosions or great heat or waste. It is also very noteworthy that the furnaces, or muscles, can burn their fuel, such as sugar, at the temperature of Jack's house, though the most skilful chemists cannot get sugar to burn at anything like that temperature outside such houses as Jack's.

THE MARVELOUS MACHINES WHICH NO MAN CAN MAKE

Furthermore, there are no machines so clever as Jack's muscles anywhere else. The great business of an engineer is to get a machine which will turn as much as possible of the fuel it consumes into useful work. If a machine can turn ten or fifteen per cent. of its fuel into useful work it is called highly efficient and economical. The rest is waste. Most machines do very much less than this. But Jack's muscles not only turn a higher proportion of their fuel into power than any machine made by man can, they also turn the whole of what is left of the fuel into heat to keep Jack's house warm. There is thus no waste at all; and these machines are therefore much superior to all others, not to mention the trifling fact that they repair themselves from moment to moment—as if one could send a stream of steel through a motor-car by which it made good its wear and tear as it went along the road!

But only the least of the wonders has yet been told. Jack was once a baby, and his house was a baby's house. Yet it grew into Jack's house, and it is still growing. Now, it is wonderful enough to have a house that can maintain itself in repair, but what can you say about a cottage that can grow into a mansion? The truth is that there is nothing to be found in fairy tales which equals Jack's house. It is a magic house, surpassing all knowledge and all imagination, not only in the marvelous intricacy of its architecture and the unique character of its materials, not only in its extraordinary powers of feeling and doing and thinking, but also in its amazing history.

THE HOLY HOUSE IN WHICH GOD LIVES

We have not yet considered the most solemn thing of all, that Jack's house is also the House of God. Think of the words of St. Paul, "What! Know ye not that your body is the temple of the Holy Ghost?"

Jack's house is therefore a holy place, to be cared for, kept clean and pure, and held in honor because of Him who dwells therein. Those who remember this solemn truth will treat their bodies with careful respect, avoid habits which injure them or do them dishonor, and seek to protect the bodies of others.

THE NEXT STORY OF JACK'S HOUSE IS ON PAGE 5902.



A WEDDING IN THE HILLS OF SCOTLAND DURING THE PERSECUTION OF THE COVENANTERS

BRAVE GRIZEL HUME

WE may search all history without finding a more charming story of heroism and devotion than that of Grizel Hume. Most of us might hope to be heroes or heroines for the time being in some desperate situation, but Grizel was a heroine all her life. She was born at Redbraes Castle, Berwickshire, on Christmas Day, 1665, and was the daughter of Sir Patrick Hume, or Home; we are not certain now about the spelling. There were eighteen children in the family—and all of them, save two, were younger than herself. She, however, was the special favorite of her father. She showed such extraordinary intelligence that he entrusted her, when she was quite a tiny girl, with secrets which involved his very life, as well as the fortunes of his family.

For we must remember that at this time Scotland, and a great part of England, were greatly excited over what is known as the Covenant. After the Reformation, religious men in Scotland bound themselves by this Covenant to do all in their power to oppose the Pope, and to foster and extend the Protestant faith. When Scotland joined England against Charles I., the Covenant was agreed to by both nations; and when

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Charles II., after his banishment, was allowed to go back into England to take the throne, he signed the Covenant on landing, and signed it again on being crowned. As soon as he had gained the throne, however, this dishonest king declared the Covenant illegal, and forbade people, on pain of death, to be bound by it. The result was practically civil war. Soldiers were sent to put down the Covenanters. They hunted and killed them with great cruelty, and Scotland became a land of blood and tears.

Grizel's father held to the Covenant, and was several times imprisoned as the result. When Grizel was only ten years old she knew all that was happening. She was filled with sympathy for the persecuted Covenanters, and burned with wrath against the cruel soldiers. At twelve years of age she was called upon to play her first heroic part in life.

A splendid character named Robert Baillie, a bold Covenanter, had been cast into Edinburgh Prison. He had made the mildest attempt to obtain justice for a Covenanting minister who had been wrongfully arrested through the false charges of a scoundrel. The authorities did not bother about the minister; all they

wanted was to get hold of Baillie. They threw him into prison, and detained him for a long time. Eventually, after many pretended trials, they took him, one day, to court in his night-clothes, when he was at death's door, tried him, and sentenced him to be hanged and quartered. And the shameful sentence was carried out upon the dying man. That, however, happened after the date at which our story opens.

At the time that we first meet little Grizel, Baillie was in prison, and it was necessary for Sir Patrick Hume to communicate with him. Sir Patrick dared not go himself, or the soldiers would have seized him as well. So brave little Grizel, this child of twelve, went in her father's place. Seeing a jailer going into the prison, she slipped in behind him and hid herself in the shadow of the cell until he had gone, then came forth into the middle of the cell and delivered the message which her father had given her.

In the cell with the poor prisoner there was a little boy—George Baillie, the prisoner's son. How he admired the bravery and skill of the little girl in eluding the guard and getting into the prison! She, on her part, admired the little boy, who was there sharing the misery of the cell with his father.

Grizel managed somehow to get safely out of the prison and to make her way back from Edinburgh to her father's home, taking the message which the prisoner had given her.

Having executed Baillie, the authorities now thirsted for the life of the valiant Sir Patrick; and about a year after the death of Baillie, the Humes heard that the soldiers were on their way to Redbraes Castle. To be taken would mean death, but how was he to escape capture? It was certain that he could not hide in or near the castle, for the soldiers would search every nook and cranny. Sir Patrick, his wife, and Grizel, and a carpenter named Winter put their heads together, formed a plan, and decided on a hiding-place. They dared not let the other children or servants know it, for fear the soldiers should get the secret out of them.

Winter and Grizel went at dead of night to Polwarth Church, which was a mile and a half from the castle. There they carried a bed and bedclothes, and made a hiding-place for Sir Patrick in the

family grave of the Humes in the church. In that resting-place of the dead, the living man was to take up his abode. He went as soon as the retreat was prepared, and when the soldiers arrived at the castle not a trace of him could they find. They could only believe that he had fled from the neighborhood. Meanwhile Grizel's father was safe in the church vaults, but he had to be fed. He could not return to the castle, for the soldiers lingered in the neighborhood; but where he was he might as well be dead, so helpless was he. Brave Grizel was equal to this difficulty also.

Night after night she carried food to her fugitive father. The task of getting this food was in itself very hazardous. It would not have done to take it from the larder, for the servants would have missed it, and have had their suspicions aroused. The only way was for poor Grizel to smuggle the food off her plate, and into her lap, as she sat at meals. That was her method, and once she was nearly discovered. Her mother gave her a very bountiful plateful, and presently one of her brothers, looking at her plate, noticed that practically the whole supply had disappeared, and called the attention of the others to what he thought was Grizel's greediness in eating so much with such speed.

But the smuggling of the food to her father was not Grizel's chief difficulty. Every night, at twelve o'clock, she used to set off to walk the lonely mile and a half to the church. Of course, she had to go alone. That in itself was a terrible trial for the nerves of a young girl. The thought of passing through a graveyard at that hour of night would have sufficed to scare most people. But, in addition, Grizel ran the danger of discovery by the soldiers who were in the neighborhood, and of meeting country people out poaching, who would have followed and spied upon her. Then there were dogs at large to bark at her and increase her terrors. But she smothered all her fears, and, night by night, went bravely on her way to feed her father, to stay and talk for some time with him, to cheer him with such news as she could tell him, and to inspire him with courage to bear his dreadful captivity.

At last Grizel thought it would be safe for her father to return to a hiding-place in the castle. So she and Winter dug a

GRIZEL HUME IN THE PRISON AT EDINBURGH



The brave little Grizel hid herself in the shadow of the cell until the jailer had gone. Then she came forth to give her father's message to the prisoner. How the prisoner's son, who was in the cell, admired the brave girl!

great hole in the basement of the castle. They were afraid to use a spade lest the noise should be heard; so they used their finger-nails for the work. Early every morning they would take up, in a cloth, the soil dug out during the night, and empty it in the garden, and cover over the hole. At last the hole was made large enough to admit a big box. In this they placed bed and bedding, and then, one night, Sir Patrick crept home and hid himself in the new sanctuary. For a week this refuge held good, but water drained into the hole and made it impossible for Sir Patrick to remain, so he determined to flee abroad for safety.

Grizel altered his clothes to make them like the clothes of a peasant, and, when news came to the house that the soldiers were again on the hunt for him, he set out. He made his way to London, and secured a passage on board a ship which took him to Europe. His estates were now declared forfeit to the Crown, and the family were left without means. Grizel and her mother went to London and pleaded for support, and were granted \$750 a year out of the estate.

Sir Patrick was not idle in the meantime. He joined with others in an invasion of Scotland, but this was defeated, and he had to retire to Ireland, accompanied by his wife and all the children but one, a daughter who was left in Scotland. But the others could not rest without her, so off to Scotland went Grizel, alone into all the dangers of that unhappy country. She rescued her sister, collected some money owing to her father, and then set out to Holland, where the others had gone in advance. Grizel was the little

mother of the family. She relieved her mother of the cares of the household, and she studied music and languages and wrote quite charming poetry. The family were very poor, of course, but with such a girl to inspire them, how could they help being happy? Grizel used to say that those years of poverty were the happiest of her life.

She had by this time grown into a beautiful and accomplished young woman, and more than one handsome young man sought her hand. But little George Baillie had, by this time, developed into a handsome, brave young fellow, and, an exile from home, was serving in Holland in the Guards of the Prince of Orange. The friendship begun in childhood between himself and Grizel had ripened, and, poor as they were, the two loved and hoped.

At last their reward came. The Prince of Orange entered England with an army, and the wretched King James II., who had succeeded to the throne at the death of his brother, Charles II., was driven from the land. Then those good and brave men who had suffered in the evil days were restored to their estates. The Princess of Orange so admired Grizel that she wished to make her a Maid of Honor, and always have her at Court.

But Grizel preferred to return to Scotland with her father, who was now created Earl of Marchmont, and made Lord Chancellor of Scotland. Grizel, as an earl's daughter, now became Lady Grizel Hume. But she was not long to be known by that name. George Baillie had returned to Scotland, and the sweet-hearts were at last married, in 1692, fifteen years after they had first met.

THE MAN WHO LOVED THE HOUSE

HE had a poor little name—William Twopeny—but in other ways he was rich. In 1797, when he was born at Rochester, many great artists were at work in England; and Nelson, always ready to save his country from Napoleon, was soon to win the great battle of the Nile, August 1, 1798.

When Twopeny was eight years old, in 1805, Trafalgar was fought and won, and Nelson, in his last words to his sorrowing officers, said, "Thank God, I have done my duty!"

Then Wellington took up the burden of England's fight for life; and Twopeny

was eighteen when peace and safety were gained at last on the stricken field of Waterloo, June 18, 1815, at sunset. Think of those times, read about them, and you will see that it was a noble education to be a child then; for boys and girls were taught by danger to understand that the word *home* meant *country* also. If Napoleon had won, there would have been no British homes in Ireland and Scotland and England.

William Twopeny never forgot that lesson, though he lived to be an old man, dying in 1873. His heart was always young, and from first to last he worked

THE MAN WHO LOVED THE HOUSE

very hard, learning to know what England was like in the past; how her people lived at home, and how they made beautiful things—houses and cottages and churches, barns and bridges, furniture of many kinds, and songs, plays, and poems, and beautiful pictures.

There was little that he did not know about the story of the English houses; even a few words of help and advice from him were worth years and years of loving patience in a search after truth—after knowledge; and so a great many persons, many of them distinguished, came to him for help when books were

who goes there can see them to-day. There are twenty-eight albums in all, and they contain many hundreds of exquisite drawings; yet their beauty is little known. The children of England have not yet heard of them, and the grown-ups are too busy to visit them. Twopeny, then, is a kingdom to be rediscovered; it is he who rules over the realm of home through six centuries of its long history.

And what do these books represent? Houses of English workmanship from the twelfth century to the reign of Charles II. Rooms, too, and beautiful details,



A BEAUTIFUL DRAWING BY WALTER TWOPENY OF POUND'S BRIDGE, NEAR PENSURST, KENT

written on English churches and English homes. Yes, and we, too, must go to him now, not once, but many times, to make friends with his beautiful work, and to see how he traveled from London to many parts of England, often on foot, drawing with a pencil all the most beautiful things he could find, until his many albums of sketches made a history of English homes and churches, from the twelfth century to the seventeenth.

A year after his death these albums of drawings were presented to the Print Room of the British Museum, in accordance with his last wishes; and anybody

like windows and doorways, large fireplaces, within which logs and faggots burned on fire-dogs; and wall-paintings, stained glass, and charming old furniture, which the generations have neither broken nor worn out. And there are castles, and huge barns built like churches, with naves and aisles, setting us thinking of those days when England owed all her riches to her fields, so that foreigners used to say that her wealth was wheat and wool, and that she grew and banked money on the backs of her sheep. Other drawings represent village churches, with tall spires shoot-

ing up toward the sun, as if they, like skylarks, wished to be near at the same moment to the points of heaven and home.

Only those who see his pictures can understand the delicate strength and beauty that William Twopeny put into his swift pencil-work. He drew as a musician plays, understanding all and loving all; there was magic in his touch, and a great sympathy in his heart. One thing he never could forget, and it is a thing that we must learn to see with our own eyes. It is this: that Twopeny realized that he, with his pencil, must make real the life in all things. For instance, the life in clouds is their lightness; we see that they are not heavy, but float overhead, and are blown about by the winds. Yet clouds in a great many pictures look as heavy as the walls of a house, or as solid as the trunks of oak-trees. Those pictures are bad, and we must dislike them as Twopeny did.

Or, again, what is the life of a pool of water? Its liquid transparency; it looks like a brilliant eye in the fields, gazing up at the heavens and changing with their color. Artists must show that in their pictures; water must look like water, and not like hard, slippery ice.

And the reality of many noble old houses must come into the artist's pictures too. We see from Twopeny's drawing that a house stands firmly on solid land, and that it is safe

when tempests beat upon its walls. We see, too, that the stones are worn by time and use, but that weather-stains and mosses have hidden many a scar. And artists must show all this if their

work is to be good, and to be loved. But when you take a pencil in your own hand and try to draw with its lead point, you feel weak and foolish, perhaps, for how can so much be done without bright colors, with just a few

lines in different shades of grey? How, indeed! Yet Twopeny did it. He, with his pencil, could do whatever he wished, swiftly, and with ease. So let us make friends with his delicately strong work, and learn to love what he loved. It is worth while. But what about the man himself? Was he prosperous and happy, or did he die of despair, misunderstood, neglected, and desperately in need of money? Unluckily, very few facts have been discovered. There is no contemporary account of his life, though his drawing

and his knowledge helped to make important books on English architecture. But three or four things are beyond doubt. Twopeny was well-to-do, for he

was able to be a patron to another artist, J. W. Archer, who received from him a commission to make twenty drawings a year of "Old London." Archer was a clever and charming draughtsman, and it is pleasant to know that he won so much friendly help from Twopeny. His work also can be seen in the Print Room of the British Museum. We learn, again, that Twopeny's father was a student of the past, a devoted antiquarian, living at Rochester, but

that Twopeny made his home in London. He traveled much in England; we can follow his travels in his work, the best autobiography that a man can write.

THE NEXT GOLDEN DEEDS ARE ON PAGE 5707.



OLD HOUSES AT CHESTER



STEPS AT POWIS CASTLE IN WALES

The Book of POETRY

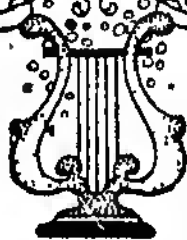
A CHILDREN'S POEM BY THACKERAY

IT is as a great author of fiction and romance that we all know Thackeray, some of whose famous stories have been retold in the "Story of Famous Books." He was also a writer of poetry, chiefly of a lively and humorous kind, of which an example is given in the poem "A Tragic Story"; but no writer has excelled him in the power to invest common objects of everyday life with the interest that arises from sentiment and affection. In the poem which we give here we have an admirable example of his power in this direction. It is touched with true human feeling, and although cane-bottomed chairs are now rather out of fashion, the sentiment attaching to any old chair, in which we recall the presence of some departed loved one, will never go out of fashion. The poet's mention of "rich Latakia" in the seventh verse refers to the kind of tobacco he was supposed to be smoking in his snug little room high up in a London dwelling.

THE CANE-BOTTOMED CHAIR

IN tattered old slippers
that toast at the bars,
And a ragged old jacket
perfumed with cigars,
Away from the world, and its toils
and its cares,
I've a snug little kingdom up four pair
of stairs.
To mount to this realm is a toil, to be
sure,
But the fire there is bright, and the air
rather pure;
And the view I behold on a sunshiny day
Is grand through the chimney-pots over
the way.
The snug little chamber is crammed in all
nooks
With worthless old knickknacks and silly
old books,
And foolish old odds, and foolish old ends,
Cracked bargains from brokers, cheap keep-
sakes from friends.
Old armour, prints, pictures, pipes, china,
all cracked,
Old rickety tables and chairs broken-
backed;
A twopenny treasury, wondrous to see.
What matter? 'tis pleasant to you, friend,
and me.
No better divan need the Sultan require
Than the creaking old sofa that basks by
the fire;
And 'tis wonderful, surely, what music
you get
From the rickety, ramshackle, wheezy
spinnet.
That praying-rug came from a Turcoman's
camp;
By Tiber once twinkled that brazen old
A Mameluke fierce yonder dagger has
drawn,
'Tis a murderous knife to toast muffins
Long, long, thro' the hours, and the night,
and the chimes,
Here we talk of old books, and old friends,
and old times,
As we sit in a fog made of rich Latakia, [me.
This chamber is pleasant to you, friend, and

CONTINUED FROM 5504



But of all the old sweet
treasures that garnish
my nest,
There's one that I love
and I cherish the best;
For the finest of couches that's padded
with hair
I never would change thee, my cane-
bottomed chair.
'Tis a bandy-legged, high-shouldered,
worm-eaten seat,
With a creaking old back and twisted old
feet;
But, since the fair morning when Fanny
sat there,
I bless thee, and love thee, my cane-
bottomed chair.
If chairs have but feeling in holding such
charms,
A thrill must have passed thro' your
withered old arms;
I looked, and I longed, and I wished in
despair;
I wished myself turned to a cane-bottomed
chair.
It was but a moment she sat in this place;
She'd a scarf on her neck and a smile on
her face;
A smile on her face, and a rose in her hair,
And she sat there and bloomed in my cane-
bottomed chair.
And so I have valued my chair ever since,
Like the shrine of a saint, or the throne of
a prince;
Saint Fanny, my patroness, sweet I declare,
The queen of my heart and my cane-
bottomed chair.
When candles burn low and the company
is gone,
In the silence of night as I sit here alone—
I sit alone, but we yet are a pair;
My Fanny I see in my cane-bottomed chair.
She comes from the past and revisits my
room;
She looks as she then did, all beauty and
bloom;
So smiling and tender, so fresh and so fair,
And yonder she sits in my cane-bottomed
chair.

SOUND THE LOUD TIMBREL

Thomas Moore, the celebrated Irish poet and the author of this poem, was born in Dublin in 1779 and died in 1852.

SOUND the loud timbrel o'er Egypt's dark sea !
 Jehovah has triumphed — His people are free.
 Sing, for the pride of the tyrant is broken,
 His chariots, his horsemen, all splendid and brave,
 How vain was their boasting ! the Lord hath but spoken,
 And chariots and horsemen are sunk in the wave.
 Sound the loud timbrel o'er Egypt's dark sea !
 Jehovah has triumphed — His people are free.

Praise to the Conqueror, praise to the Lord,
 His word is our arrow, His breath is our sword !
 Who shall return to tell Egypt the story,
 Of those she sent forth in the hour of her pride ?
 For the Lord hath looked out from His pillar of glory,
 And all her brave thousands are dashed in the tide.
 Sound the loud timbrel o'er Egypt's dark sea !
 Jehovah has triumphed — His people are free.

PIPING DOWN THE VALLEYS WILD

William Blake, the famous English poet, has always a touch of the mystical and imaginative even in his simplest verses, and this poem is no exception to the rule. What the poet means to suggest to us is the inspiration of the true singer of Nature, whose written poems should be as much in tune with Nature itself as the imaginary piper referred to in the following poem, who turns his hollow reed into a pen to write down for ever the songs he has been piping.

PIPING down the valleys wild,
 Piping songs of pleasant glee,
 On a cloud I saw a child,
 And he, laughing, said to me :

" Pipe a song about a lamb."
 So I piped with merry cheer.
 " Piper, pipe that song again."
 So I piped ; he wept to hear.

" Drop thy pipe, thy happy pipe ;
 Sing thy songs of happy cheer."
 So I sang the same again,
 While he wept with joy to hear.

" Piper, sit thee down, and write
 In a book that all may read."
 So he vanished from my sight,
 And I plucked a hollow reed.

And I made a rural pen,
 And I stained the water clear,
 And I wrote my happy songs
 Every child may joy to hear.

HERACLITUS

This very beautiful little poem by William Cory, generally called William Johnson Cory because his name was formerly Johnson, is supposed to be a farewell tribute from the friend of a Greek poet, whom we know only by tradition. There was a famous Heraclitus, a philosopher of Ephesus, who lived 500 years before the birth of Christ, but the Heraclitus here addressed was a different person, who lived a century or more later. Whereas the philosopher's language was uncouth and difficult to understand, the poems of the later Heraclitus were famed for their beautiful melody and simplicity. The life of the philosopher is dealt with in another page of this book. William Cory was a well-known scholar and an assistant master at Eton College. Caria was a place in Asia Minor where Heraclitus lived.

THEY told me, Heraclitus, they told me
 you were dead,
 They brought me bitter news to hear and bitter
 tears to shed.
 I wept as I remembered how often you
 and I
 Had tired the sun with talking and sent him
 down the sky.

And now that thou art lying, my dear old
 Carian guest,
 A handful of grey ashes, long, long ago at
 rest,
 Still are thy pleasant voices, thy nightingales,
 awake ;
 For Death, he taketh all away, but them he
 cannot take.

MASSA'S IN THE COLD, COLD GROUND

Stephen Collins Foster, the author of the following familiar poem, wrote many other well-known songs, among which may be mentioned the following—"Old Folks at Home," "The Swanee River," and "My Old Kentucky Home."

ROUND de meadows am a-ringing
 De darkey's mournful song,
 While de mocking bird am singing
 Happy as de day am long.
 Where de ivy am a-creeping
 O'er de grassy mound,
 Dare old massa am a-sleeping,
 Sleeping in de cold, cold ground.

Down in de cornfield,
 Hear dat mournful sound :
 All the darkeys am a-weeping,
 Massa's in de cold, cold ground.

When de autumn leaves am falling,
 When de days are cold,
 'Twas hard to hear old massa calling,
 Cayse he was so weak and old.
 Now de orange trees am blooming,
 On de sandy shore,
 Now de summer days am coming,
 Massa nebber calls no more.

Massa make de darkeys love him,
 Cayse he was so kind,
 Now, dey sadly weep above him,
 Mourning cayse he leave dem behind.
 I cannot work before to-morrow,
 Cayse de teardrop flow,
 I try to drive away my sorrow,
 Pickin' on de old banjo.

THE MAN WHO IS TWELVE YEARS OLD

The great poet Wordsworth said, "The child is father of the man," and in these lines Maurice Smiley, an American writer, develops a similar thought. He sees in every boy of twelve the man into whom the boy will change in future years, and, knowing that all the great men of a later age are now boys, he takes off his hat and salutes the hidden greatness in boys, undeveloped, but there. That is why all boys and girls should be educated—nobody can tell where genius is waiting to be drawn out, the true meaning of the word education.

THERE'S a man that I know, and he lives near you,

In a town called Everywhere ;
You might not think he's a man from his hat
Or the clothes he may chance to wear ;
But under the jacket with many a patch
Is a heart more precious than gold—
The heart of a man 'neath the coat of a boy,
A man who is twelve years old.

He only is waiting to wear the crown
That already is made for his brow ;
And I pray that his mind will always be clean,
His body as pure as snow ;
His heart always fresh and sunny and warm,
And free from life's canker and mould,
And may he be worthy his waiting estate,
This man who is twelve years old.

We never may know what the future will make
Of the boys that we carelessly meet,
For many a statesman is now at school,
And presidents play in the street.
The hand that is busy with playthings now
The reins of power will hold ;
So I take off my hat and gladly salute
This man who is twelve years old.

FOUR THINGS

Quite a long sermon is condensed in this pithy little verse by Dr. Henry Van Dyke, a famous American preacher and poet.

FOUR things a man must learn to do
If he would make his record true :
To think without confusion clearly ;
To love his fellow-men sincerely ;
To act from honest motives purely ;
To trust in God and heaven securely.

THE SLEEP

"He giveth His beloved sleep."—Ps. cxxvii. 2.

OF all the thoughts of God that are
Borne inward unto souls afar,
Along the Psalmist's music deep,
Now tell me if that any is,
For gift or grace, surpassing this—
"He giveth His beloved sleep" ?

What would we give to our beloved ?
The hero's heart, to be unmoved,
The poet's star-tuned harp, to sweep,
The patriot's voice, to teach and rouse,
The monarch's crown, to light the brows ?—
"He giveth His beloved sleep."

"Sleep soft, beloved !" we sometimes say,
Who have no tune to charm away
Sad dreams that through the eyelids creep :
But never doleful dream again
Shall break the happy slumber, when
"He giveth His beloved sleep."

O earth, so full of dreary noises !
O men, with wailing in your voices !
O delved gold, the wailers heap !
O strife, O curse, that o'er it fall !
God makes a silence through you all,
And "giveth His beloved sleep."

His dew drops mutely on the hill,
His cloud above it floateth still,
Though on its slope men sow and reap.
More softly than the dew is shed
Or cloud is floated overhead,
"He giveth His beloved sleep."

Yea, men may wonder while they scan
A living, thinking, feeling man,
Confirmed, in such a rest to keep ;
But angels say—and through the word
I think their happy smile is heard—
"He giveth His beloved sleep."

For me, my heart that erst did go
Most like a tired child at a show,
That sees through years the jugglers leap,—
Would now its wearied vision close,
Would childlike on His love repose,
Who "giveth His beloved sleep" !

And friends, dear friends,—when it shall be
That this low breath is gone from me,
And round my bier you come to weep,
Let one, most loving of you all,
Say, "Not a tear must o'er her fall—
He giveth His beloved sleep."

ELIZABETH BARRETT BROWNING.

MARCO BOZZARIS

Marco Bozzaris was a Greek patriot, who for a number of years fought against the Turks for the freedom of his country. From the middle of the fifteenth till early in the nineteenth century Greece was under Turkish rule. Marco was killed in an attack upon the Turkish army. This beautiful little poem was written by Fitz-Greene Halleck, an American poet.

AT midnight, in his guarded tent,
The Turk was dreaming of the hour
When Greece, her knee in supppliance bent,
Should tremble at his power ;
In dreams, through camp and court, he bore
The trophies of a conqueror ;
In dreams his song of triumph heard ;
Then wore his monarch's signet ring ;
Then pressed that monarch's throne—a king ;
As wild his thoughts, and gay of wing,
As Eden's garden bird.

At midnight, in the forest shades,
Bozzaris ranged his Suliote band,
True as the steel of their tried blades,
Heroes in heart and hand.
There had the Persian's thousands stood,
There had the glad earth drunk their blood
On old Plataea's day ;
And now there breathed that haunted air
The sons of sires who conquered there,
With arm to strike and soul to dare
As quick, as far as they.

An hour passed on—the Turk awoke ;
That bright dream was his last ;
He woke—to hear his sentries shriek,
"To arms ! they come ! the Greek ! the
Greek !"

He woke—to die midst flame, and smoke,
And shout, and groan, and sabre-stroke,
And death-shots falling thick and fast
As lightnings from the mountain-cloud;
And heard, with voice as trumpet loud,
Bozzaris cheer his band:
"Strike—till the last armed foe expires;
Strike—for your altars and your fires;
Strike—for the green graves of your
sires;
God—and your native land!"

They fought—like brave men, long and well.
They piled that ground with Moslem
slain,
They conquered—but Bozzaris fell,
Bleeding at every vein.
His few surviving comrades saw
His smile when rang their proud hurrah,
And the red field was won;
Then saw in death his eyelids close
Calmly, as to a night's repose,
Like flowers at set of sun.

Bozzaris! with the storied brave
Greece nurtured in her glory's time,
Rest thee—there is no prouder grave,
Even in her proud elime.

Talk of thy doom without a sigh;
For thou art Freedom's now, and Fame's:
One of the few, the immortal names,
That were not born to die.

THE EVE OF WATERLOO

This poem was written to commemorate the awful battle of Waterloo, which was fought in the year 1815. Napoleon was marching upon the city, and Lord Byron, who wrote the poem, brings vividly before us how the brilliant military ball in Brussels was broken up by tidings of his advance. A night of joyous gaiety broke upon a morning of sad farewells.

THERE was a sound of revelry by night,
And Belgium's capital had gathered then
Her Beauty and her Chivalry, and bright
The lamps shone o'er fair women and brave
men;
A thousand hearts beat happily; and when
Music arose with its voluptuous swell,
Soft eyes look'd love to eyes which spake
again,
And all went merry as a marriage bell;
But hush! hark! a deep sound strikes like a
rising knell!

Did ye not hear it?—No; 'twas but the
wind,
Or the car rattling o'er the stony street;
On with the dance! let joy be unconfined;
No sleep till morn, when Youth and Pleasure
meet
To chase the glowing Hours with flying
feet—
But hark!—that heavy sound breaks in once
more,
As if the clouds its echo would repeat;
And nearer, clearer, deadlier than before!
Arm! Arm! it is—it is—the cannon's opening
roar!

Within a window'd niche of that high hall
Sate Brunswick's fated chieftain; he did
hear
That sound the first amidst the festival,
And caught its tone with Death's prophetic
ear;

And when they smiled because he deem'd it
near,
His heart more truly knew that peal too well
Which stretch'd his father on a bloody bier,
And roused the vengeance blood alone could
quell;
He rush'd into the field, and, foremost fighting,
fell.

Ah! then there was hurrying to and fro,
And gathering tears, and tremblings of dis-
tress,
And cheeks all pale, which but an hour ago
Blush'd at the praise of their own loveli-
ness;
And there were sudden partings, such as
press
The life from out young hearts, and choking
sighs
Which ne'er might be repeated; who could
guess
If ever more should meet those mutual eyes,
Since upon night so sweet such awful morn
could rise!

And there was mounting in hot haste: the
steed,
The mustering squadron, and the clattering
car,
Went pouring forward with impetuous speed,
And swiftly forming in the ranks of war;
And the deep thunder peal on peal afar;
And near, the beat of the alarming drum
Roused up the soldier ere the morning star;
While throng'd the citizens with terror dumb,
Or whispering, with white lips—"The foe!
they come! they come!"

And wild and high the "Cameron's gather-
ing" rose!
The war-note of Lochiel, which Albyn's
hills
Have heard, and heard, too, have her Saxon
foes:—
How in the noon of night that pibroch
thrills,
Savage and shrill! But with the breath
which fills
Their mountain pipe, so fill the mountaineers
With the fierce native daring which instils
The stirring memory of a thousand years,
And Evan's, Donald's fame rings in each clans-
man's ears!

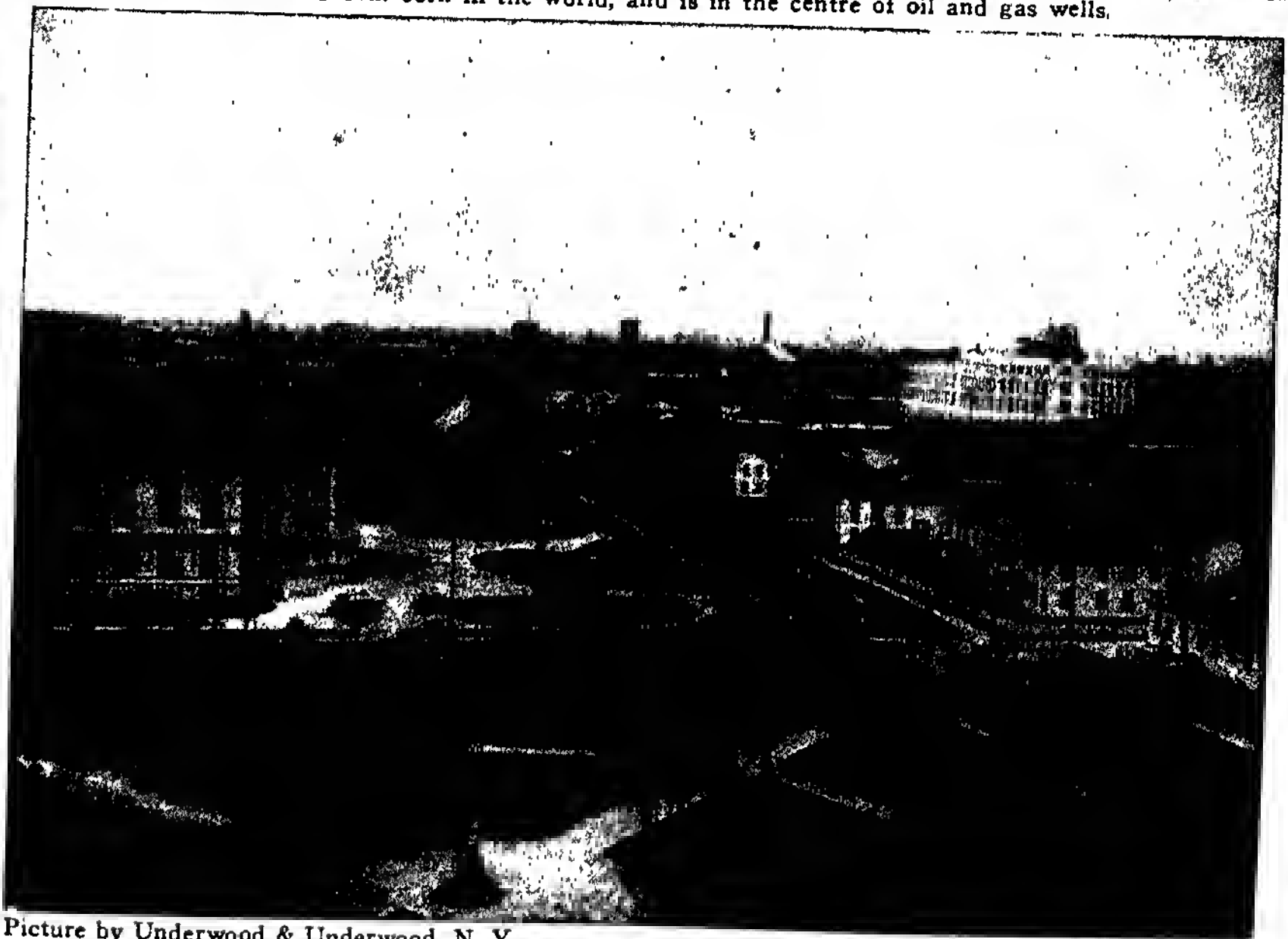
And Ardennes waves above them her green
leaves,
Dewy with Nature's tear-drops as they
pass,
Grieving, if aught inanimate e'er grieves,
Over the unreturning brave,—alas!
Ere evening to be trodden like the grass
Which now beneath them, but above shall
grow
In its next verdure, when this fiery mass
Of living valour, rolling on the foe
And burning with high hope shall moulder
cold and low.

Last noon beheld them full of lusty life,
Last eve in Beauty's circle proudly gay,
The midnight brought the signal-sound of
strife,
The morn, the marshalling in arms,—the day,
Battle's magnificently stern array!

CITIES OF THE WEST AND SOUTHWEST




A few years ago Kansas was almost entirely an agricultural state, and not very prosperous. Now it is becoming a wealthy commonwealth, and manufactures of every sort are developing. Wichita has grown very rapidly recently, and is one of the busy cities of the central West. It has large stockyards, is one of the largest markets for broom corn in the world, and is in the centre of oil and gas wells.



Picture by Underwood & Underwood, N. Y.

Galveston, Texas, might be called Western or Southern. It is built on an island in the Gulf of Mexico. It is the greatest cotton port in the world, and its piers allow over a hundred ships to take on or discharge cargoes at the same time. The United States has made the defences of the city very strong.

WHAT EVERY WISE CHILD SHOULD DO



I F I want to be happy
And quick on my toes,
I must eat my food slowly
And breathe through
my nose.

I must press back my
shoulders,
And hold up my head,
And *not* close my window
When going to bed.




I must soap my
bath-flannel,
And scrub all I know ;
I must then take a
towel
And rub till I glow.

I must never be idle,
And loll in my chair ;
Or shout like a demon,
And act like a bear.

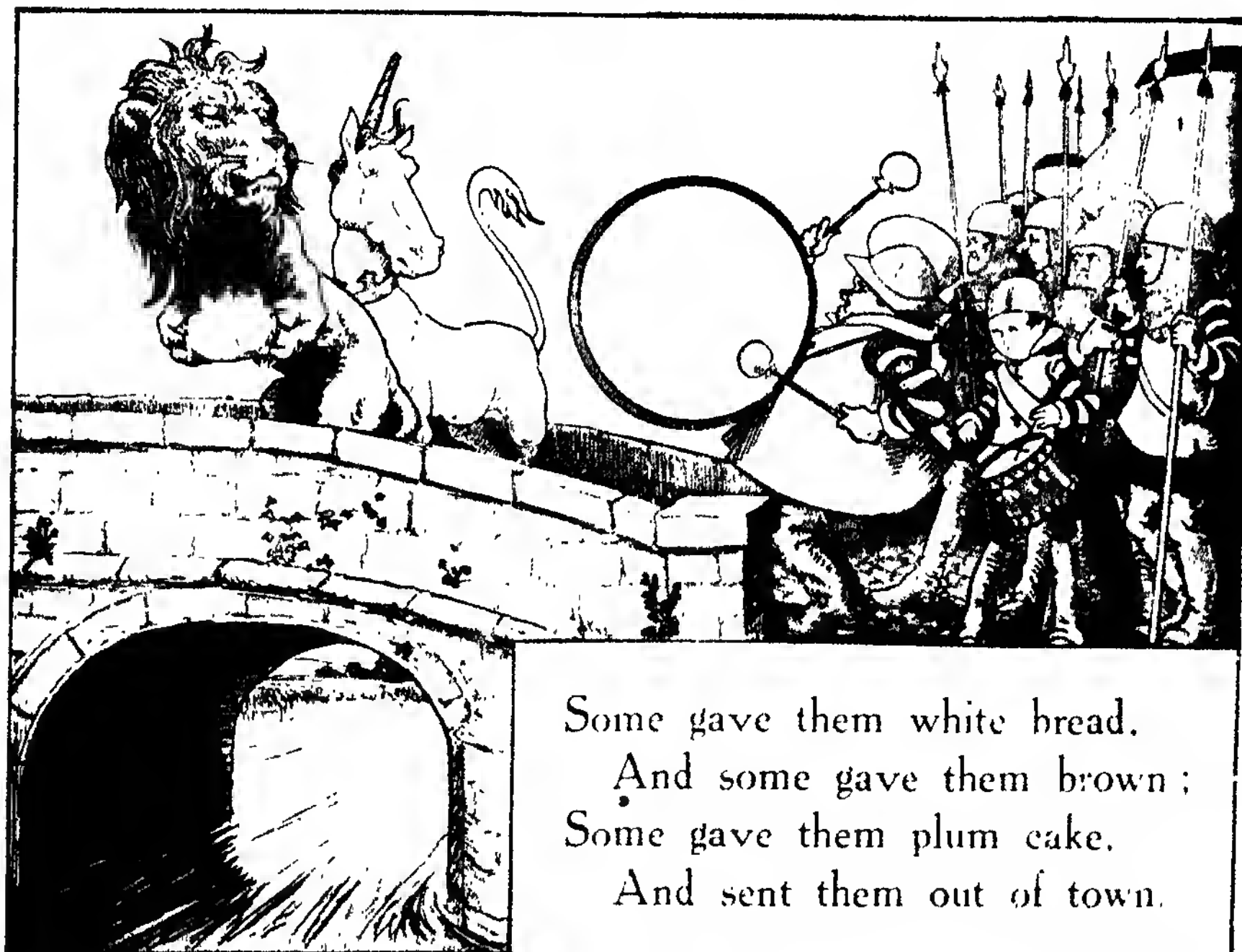
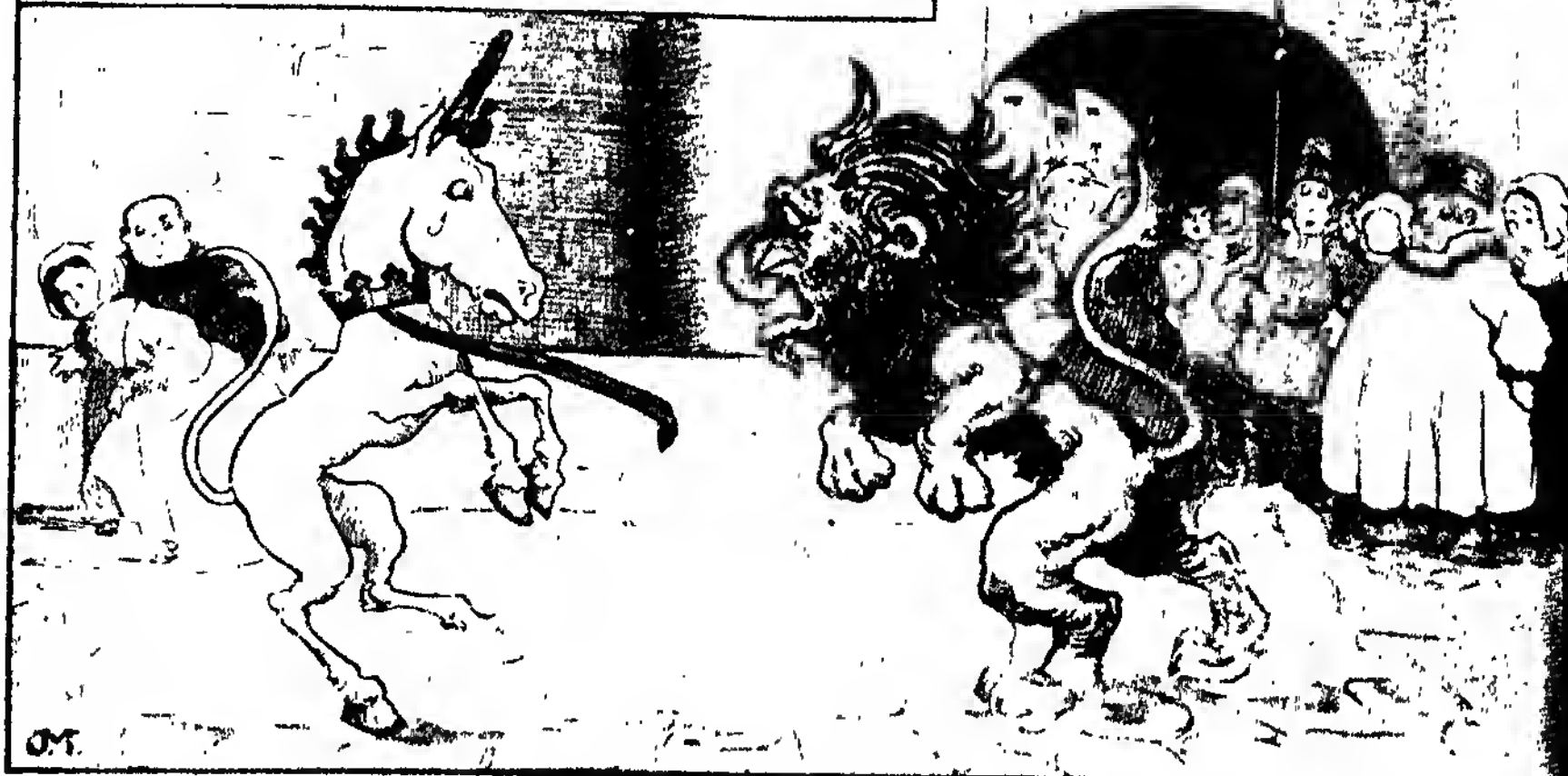
I must play and not fidget,
Read books and not flop ;
Begin all with a purpose,
And know when to stop

I must love what is noble,
And do what is kind ;
I must strengthen my body
And tidy my mind.

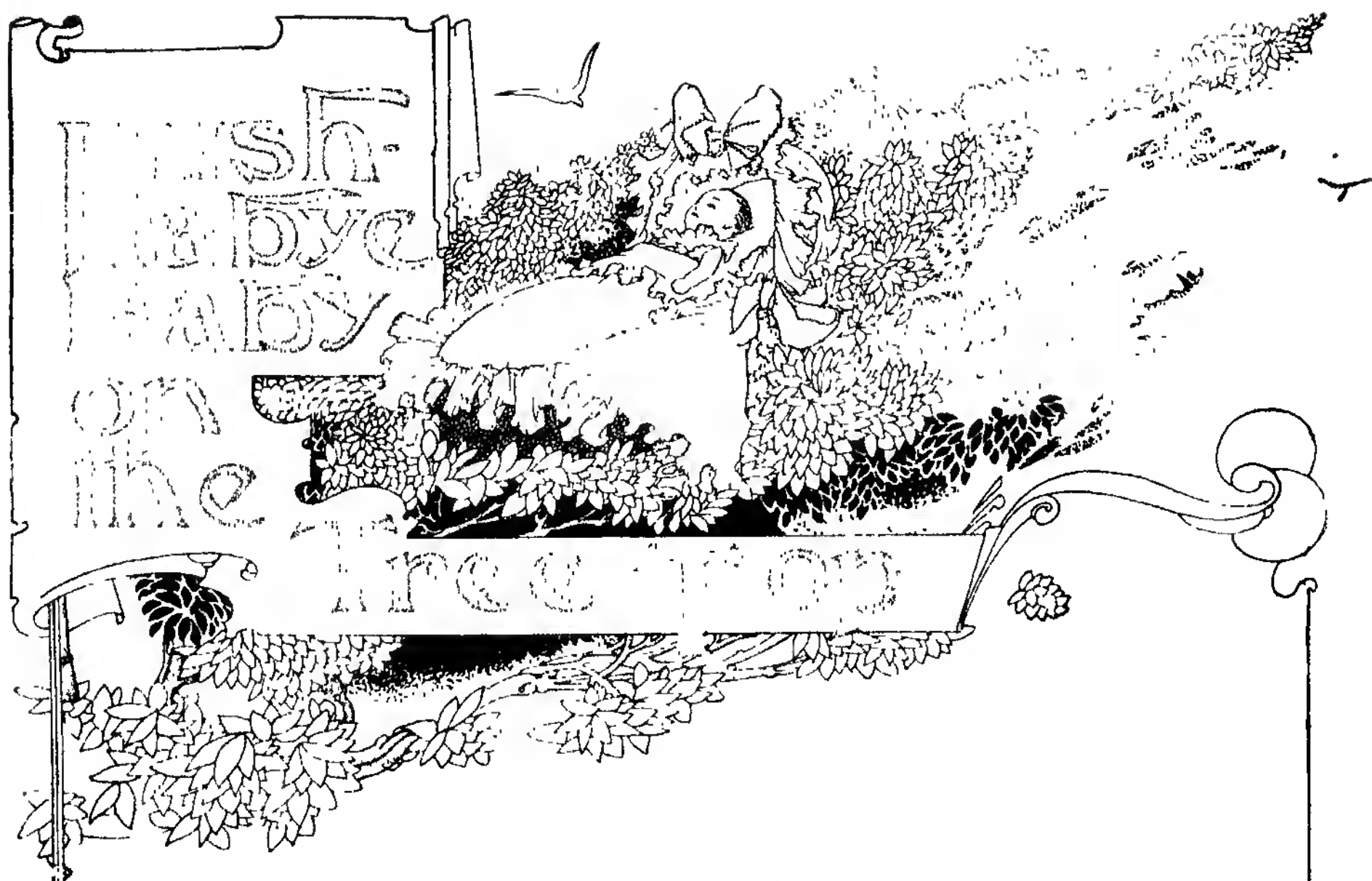
Yes, if I would be healthy,
And free from all cares,
I must do all I've told you,
And *mean* all my
prayers.



The Lion and the Unicorn
Were fighting for the Crown ;
The Lion beat the Unicorn
All round about the town.

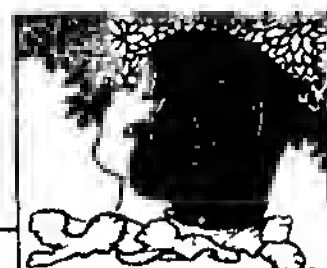


Some gave them white bread.
And some gave them brown ;
Some gave them plum cake,
And sent them out of town.



Very Soft

Hush-a-bye, ba - by, on the tree-top, When the wind
blows the cra - dle will rock ; When the bough breaks the
cra - dle will fall : Down will come ba - by, cra - dle, and all !



The Book of WONDER

IT is well to know something about worry, the dreadful feeling that makes us feel as if all the world had gone awry. But once we have found out what it is, we must put it away from us. A thermos bottle is a most useful thing for picnics. If we have two we can provide ourselves with both hot soup and cold lemonade. This is a curious fact that is really quite puzzling until we know the simple scientific reason for it. It is not always so easy to find an answer to questions. Why sugar should dissolve more quickly in hot water than in cold is a puzzle to which the Wise Man tells us even learned scientists have not been able to find an answer. The Wise Man tells us too that no matter how fond we are of wild birds, it is better to keep away from their nests. If we touch it or handle the eggs it may be that the mother birds will fly off, and the poor birdlings in the eggs will die of cold. Even after they are hatched it is better to keep away and not frighten the mother away. Baby birds need great care, even though, the Wise Man says, they grow up much more quickly than baby boys and girls.

WHY DO WE WORRY?

WORRY is a state of feeling, and, as everyone knows, it may be aroused by many causes, real or imaginary. Yet this is a question well worth answering, because it helps to teach us a great fact about ourselves. If we think about worry and observe ourselves, we shall notice that we do not worry about the present. We worry about having to go to the dentist, but when the tooth is actually being drilled we do not worry, though we may fear. Worry is perhaps fear, but it is always about either the future or the consequences of the past—usually the future.

A creature, then, that lives entirely in the present cannot worry; but all creatures except ourselves live in the present, and babies and very small children live in the present, too, so they cannot worry. The great and grand mark of man, however, is that, as Shakespeare said, he is "made with such large discourse, looking before and after." It is this power of "looking before and after" that makes worry possible; and, therefore, just as worry cannot happen in cabbages or animals, or even in infants or two-year-olds, so it is *most* liable to happen in the highest types of human being, who invariably have most imagination and live least in the present, and most in the future.

This power of mankind by which we are aware of ourselves, and can

CONTINUED FROM 5516



figure ourselves in the past and in the future, is called self-consciousness, and is, above all things, that which distinguishes us from all other creatures in the world. And worry, as we have seen, is one of its consequences.

WHAT IS A THERMOS FLASK?

A thermos is a flask that keeps a hot liquid hot for a very long time. Thermos is simply the Greek word for heat; but it is really not a particularly good name, because, though it keeps a hot liquid hot for a long time, it also keeps a cold liquid cold. That fact really gives us the key to what happens, if we have right ideas as to what heat is. Heat is something, and cold is only the absence of heat. Therefore, when this little instrument keeps a hot thing hot, it must, somehow or other, be keeping the heat in, and when it keeps a cold thing cold, it must somehow be keeping heat out.

Now, we know perfectly well that a flannel blanket, for instance, acts in just the same way. It will keep a hot thing hot because it keeps its heat in, and it will prevent ice from melting because it keeps heat out. It does these things because it is a bad conductor of heat.

A thermos flask, then, must somehow be a bad conductor of heat. Between the outer and inner walls there is a space which is full, as far as possible, with simply nothing.

If there were air there, in the usual quantity, it would readily conduct the heat from inner wall to outer wall, or in the opposite direction, but the flask is so made that there shall be as little air in this space as possible, and so there is very little to carry heat across. A blanket is more like a great gate set up through which the heat cannot go in or out, but the thermos flask is more like a moat or ditch over which the heat cannot jump in or out.

DOES WHISKEY MAKE PEOPLE WARMER?

This is one of the interesting cases, of which the world is full, where the true answer to a question is just the opposite of what people think it to be. In every part of the civilized world men are still to be found who tell us that they drink whiskey to keep out the cold, and this seems to be a sensible thing to do when one is going out into the cold night air from a warm room. People judge in such a case by what they feel, and indeed when our grandfathers were children there was no other way of judging. It is certain that whiskey makes a man feel warmer, and if he *feels* warmer he naturally thinks and says that he *is* warmer.

Yet, in fact, he is cooler. This can be shown nowadays by means of the little thermometers which doctors now use, and which tell not the temperature of the skin, which matters nothing, but the temperature of the blood, which matters everything. The thermometer shows that after drinking whiskey a man's blood becomes colder, and so the man's body, as a whole, is colder, though for a time his skin feels warmer, and indeed is somewhat warmer.

WHAT HAPPENS WHEN A MAN DRINKS WHISKEY?

When a man drinks whiskey, the whiskey causes a large quantity of blood to pass quickly through the blood-vessels of the skin. This means that the skin is made warmer, and as the nerves of heat end in the skin, we are deceived and say that we are warmer. But really we are cooler, because the warm blood, exposed in large quantities at the surface of the body, rapidly loses a quantity of its heat to the outside world. This is only one of many instances where we are deceived by the surface of a thing, and the thing in this special case is our own body.

WHY DOES MILK TURN SOUR?

The change that takes place in milk when it turns sour is entirely due to the growth of microbes in it. If the milk is boiled, and then sealed up in something, it will not turn sour in any weather or in any length of time, because all the microbes in the milk, including those that turn it sour, have been killed by the boiling. Much warmth and electricity in the air to which milk is exposed favor the growth of the microbes in the milk. Microbes are plants, and we know that warmth and electricity in the air favor the growth of other plants, such as wheat or potatoes.

The stuff in sour milk which gives it its sour taste is an acid, of course, and it has the special name, which everyone should certainly know, of *lactic acid*, which simply means milk acid. It is made by microbes from the sugar in the milk, which has the corresponding name of *lactose*. Lactic acid is not bad for us, but good for us; and if good, clean milk turns sour it is none the worse for that, but in some ways, and for some people, it is much better than is milk as we usually drink it. Milk that has turned sour is highly recommended by many doctors for curing certain diseases.

WHY CAN BABY ANIMALS WALK SO MUCH SOONER THAN HUMAN BABIES?

A great book might be written about this wonderful question. One of the answers to it is that there is to some extent a proportion between a creature's length of life and the length of time it takes to grow up. We should expect the growing-up process to be quicker in the case of an animal that is very old at fifteen than in the case of a creature that may live to be a hundred or more years.

But this fact does not nearly account for the extraordinary difference in the rate of development of babies as compared with the lower animals. There must be some other principle at work. Part of the explanation is that in the highest types of animals we find that the young creatures are much more dependent upon their mothers, and for a much longer time, than are the lower animals. This is true if we compare the lives of birds with those of reptiles, or horses or dogs with fishes, or even with rats and rabbits. It is far more true when we compare ourselves with the lower animals.

Now, at first it seems surprising that the highest kinds of creature should be less capable when they are born than lower kinds. But if we compare man with, say, a dog, we shall see the reason. A dog, because it is much higher than a rabbit or a fish, can learn a little; but most of what it does it does by instinct, and instinct requires no teaching. A man has instincts too, but the great mark of him is that he is intelligent; and though intelligence can learn everything, it has everything to learn. The baby is born knowing nothing, but with endless powers of learning, and that is why it takes so long to do things.

WHY DOES A BIRD FORSAKE ITS NEST IF ITS EGGS ARE TOUCHED?

The whole meaning and purpose of the bird's nest is to be found in the eggs. The eggs exist for the future of the bird race, and the nest exists for the sake of the eggs. If the eggs are stolen, then the instinct which made the bird build the nest is disappointed, and we cannot be surprised that the bird deserts her nest.

But sometimes it may be that, even though some or all of the eggs are left, the bird may forsake her nest if it has been touched. In such cases we can only guess what really happens.

It may quite possibly be that, when the eggs have been handled, the bird is aware of a strange scent in the nest, and this "puts her off," as we say. She feels that something is wrong, and she loses heart and goes away. But such a question could only be answered for certain by making many careful experiments, which would not be kind.

IS IT TRUE THAT GREEN WALLPAPER POISONS US?

It is true that some kinds of green wallpaper used to be capable of poisoning people, but probably no paper of that kind is allowed to be made now in any civilized country. Green is not one of the easiest colors to obtain, even though so much of Nature is green, for the green dye of plants will not remain the same for long, and it soon changes its color completely.

Therefore, at one time certain green salts of arsenic were used to die wallpaper and other fabrics. But arsenic in all its forms is one of the most deadly and horrible of poisons, being poisonous, indeed, to every kind of living creature.

WHAT IS VERDIGRIS?

Verdigris is the rather curious name of a particular salt or compound of the element called copper. It is a compound made of copper and the acid called acetic acid, which is the acid that gives its taste to vinegar. So, in the language of chemists, verdigris is copper acetate. Copper is, under certain conditions, a poisonous metal, and so many people are very much afraid of verdigris when they see a film of it on copper taps, for they think they might be poisoned through drinking the water that comes from the taps. But verdigris is not so poisonous as that, though it is better to keep taps clean. It has a very brilliant green color, as we might guess if we look at the first four letters of its name, which are the French for green, and which we see in such words as verdure and verdant.

IF WE COULD GO ON TRAVELING UPWARD, WHERE SHOULD WE END?

The word upward has no real meaning. The earth is a round ball. Upward simply means away from the ball, and we might therefore make a continuous upward journey from any point of the earth's surface, and the result would be different in every case. The upward journey from any point would, for instance, be in directly the opposite direction to the upward journey from another point exactly on the other side of the earth. For every point on the earth's surface plainly must have a point exactly opposite it, and the point opposite any other is called its antipodes, a word which means opposite the feet.

But suppose we make our question more manageable by thinking of only one point, anywhere on the earth's surface, and then asking what would be the end of a continuous upward journey from that point. Then time comes into the question, for the line of the journey would never be the same in any two seconds of time, in consequence of the various motions of the earth. But suppose we fix on a place and on a moment of time the answer, whatever the place and the moment, will be the same—that such a journey would have no end, for we cannot imagine that space has any end at all.

IS IT GOOD TO HAVE TO WORK?

Work is a thing we all tire of at times, and we all enjoy the hour when we can

stop working. We look forward to our vacation; we don't like having to get up in the morning; and we wish someone would leave us a fortune; and yet, if we have any sense at all, we know in our hearts that our work is good for us, and we see every day around us the consequences that follow when people, even those who have plenty of money to amuse themselves, have no work to do.

There are two classes of people with money—those who find some work for themselves, in spite of their money, and those who do not. The first are probably happier for their money; it need do them no harm, and may do them much good. But those who find no work to do are always the worse for their money. Human beings must have occupation and a purpose in life, or their lives are worth less than nothing, both to themselves and to other people.

IS IT NECESSARY FOR ALL LIVING CREATURES TO WORK?

It is not true of some of the lower forms of life, such as lizards, that work is necessary to them as it is to man; it is natural to them to do nothing. They do not get bored, and their bodies do not get soft and poor, and they do not eat and drink more than is good for them. But the great mark of human beings, and especially of the highest kinds of human beings, is that they are made, in every bone and cell and impulse, to do things, to form purposes and carry them out.

WHY DOES SUGAR DISSOLVE MORE QUICKLY IN HOT WATER THAN IN COLD?

This sounds a very simple sort of question, which anyone ought to be able to answer, but, in point of fact, it is extremely difficult, and no one can answer it. We can only study the facts and hope that those who come after us will be able to add to them from the greater knowledge that they have gained, and find out the answer at last. The main fact, we know, is that what is true of sugar is true of almost everything. If it were true of everything, the case would be simpler, but there are a few things which will dissolve in cold water and not in hot water. These very curious exceptions make it all the more difficult for us to answer this question, but if only we knew more about it, we should doubtless find that they really furnish the very key to the answer.

We can see how difficult such a question

as this must be when we ask ourselves what really happens when anything dissolves, or melts. If we could answer that, no doubt we could explain how different conditions affect the melting.

But how can we expect to do so while we cannot yet answer the first question—what happens when sugar melts? We know that the sugar disappears; we know that it is not gone, for we can get it back, and the water containing it is heavier by just the weight of the sugar that is melted in it. But what state the sugar is really in when it has melted we cannot say.

When water is hot it takes up more room than when it is cold, and we must suppose that there is more room between the molecules of it. This should mean that there is more room to hold the molecules of sugar; and that is perhaps the best sort of a guess that we can make in answer to this very difficult question.

WHY DOES A PLANCHETTE MOVE WHEN WE PUT OUR HANDS ON IT?

The answer to this question is the same as would be the answer to the question why one person holding another person's hand can do what that other person is thinking of, without a word being said. If we have things in our minds that suggest motion or that can be expressed through any kind of muscular motion, as in going to a certain place, or in speaking, or in writing, our muscles are affected without our knowing it, by our thoughts.

We may be making no act of the will, and are quite unconscious of what is going on, but the mere fact that we have a certain thing in our minds, such as the idea of moving across the room, or the idea of the letters that form a certain word, is all the time affecting the muscles by which we should give expression to that idea if we chose to do so.

Thus, one person, without any very strong will of his own, merely by firmly keeping an idea in his head and thinking steadily of it, can make another do quite complicated things, and thus also a thing like a planchette is liable to move when we put our hands on it.

The key to these cases is to be found in the automatic muscular movements of which we are unconscious, and which have no effect upon our minds, but are of great importance and are in constant use.

THE NEXT BOOK OF WONDER IS ON PAGE 5721.



MAKING AN OUTLINE PORTRAIT

IN the days of long ago, before photography was invented, our grandfathers and grandmothers used to have portraits of themselves taken sideways. They were what were known as silhouette portraits, and they were not taken with a camera, but were cut out of thin black paper, and stuck upon a white card. The word *silhouette* comes from the name of Monsieur Etienne de Silhouette, a French Minister of Finance in 1759, who was thought to be very grasping, and it was given to this kind of portrait because it consists of the mere outline, and is quite mean, or meagre, in detail. Until a few years ago men might often have been seen in the streets of Boston and other big cities who, for a penny, would cut out a silhouette portrait of anyone who cared to stand before them for a few minutes. These portraits were about the size of a carte-de-visite photograph, and were often very good likenesses. Of course, these portraits were more or less accurate as side views of the face, according to the skill of the man who cut them out. If he had much artistic ability they were good likenesses; if not, they were sometimes very poor.

But in still earlier days, when silhouette portraits were fashionable and popular, they used to be done in a more scientific way. The person whose portrait was to be taken sat sideways before a screen, with a light on a table on the other side of him, and in this way a clear shadow was thrown upon the screen, which gave a perfect portrait if the light and sitter were arranged properly.

Then the outline would be traced upon the screen, and from this it was, by mechanical means, transferred, on a small scale, to a sheet of special black paper, cut out, and mounted on card. Many of these old silhouette portraits have come down to us. There is a famous one of Edward Gibbon,

CONTINUED FROM 55

the historian, which gives not only his face, but his whole figure, and he considered it the best of all

the portraits of himself that had ever been drawn. There is also a famous silhouette portrait of Robert Burns, the Scottish poet.

Now, any clever boy or girl can, with a little care, make silhouette portraits of his or her friends. It is not necessary to have an elaborate screen such as the old silhouette portrait makers used; all we need do is to fasten a sheet of paper on a flat wall, put the sitter near it, with a good light of some kind on a table, placed in such



A SILHOUETTE PORTRAIT

a way as to throw a shadow of our friend upon the paper. Then, with a pencil, we draw carefully round the outline of the shadow, and afterwards cut it out. We may use paper that is black on one side and white on the other, drawing the outline of the face on the white side, and sticking the portrait down with the black side up. Or we may draw the shadow-portrait on white paper, cut it out, and then, using it as a pattern, make a copy in black paper. The picture on this page shows how a person should sit to have his portrait

taken in silhouette, and at the top of the page are some specimen silhouette portraits. The sitter should, of course, sit perfectly still while the outline of the shadow is being drawn, and if necessary the head may be supported in some way so that the shadow may remain perfectly still.

Silhouette portraits must show the face sideways, as a front view would give nothing at all distinctive to indicate the features of the person represented; whereas, when the nose and chin are seen we have the likeness of a person. In arranging the light, we should be careful to place it well back on the table, so that there may be no chance of it being knocked over.

AN EASILY MADE WEATHER-VANE

EVERY clever boy can erect a weather-vane in his garden with very little trouble and at scarcely any expense. We obtain a fairly stout pole or post, straight, but whether square or round in shape does not matter at all. We then screw on to the post, at right angles to each other near the top, four iron right angles such as can be bought at any hardware store for a few cents. These are to indicate the four points of the compass. With a fret-saw we cut out four wooden letters, N., S., E., and W., with an arm underneath each as shown in picture 1. This arm is, in each case, to insert into the screw-hole that is always found in the iron angles that we buy at the hardware store. We must therefore have the arm wide enough to fit tightly into the hole of the iron angle. It can be kept perfectly firm in the hole by inserting a small piece of wood on each side of it in the hole.

Now we must make a hole in the top of the post, and firmly insert an iron rod about a quarter of an inch in diameter. This rod should be roughly pointed at both ends, and could be obtained from a blacksmith. The pole is now ready, and should be erected in the garden at a spot that is open to the winds from all directions. A sheltered spot is quite useless for a weather-vane. In erecting the post we should dig a hole about 3 feet deep, insert the post, and then fill in the earth, pressing it down tightly. On the ground

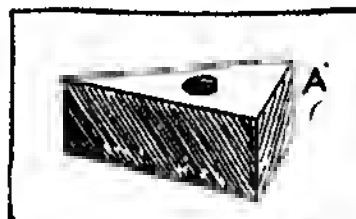
immediately round the post, we should stamp in some gravel, as this will help to tighten the hold of the earth on the post. If we want additional security in fixing up our post, we can, of course, get some cement from a builder and

mix this with water, placing the wet cement in the hole all round the post. When it dries, the cement will hold the post very firmly. Now we make the weather-vane itself.

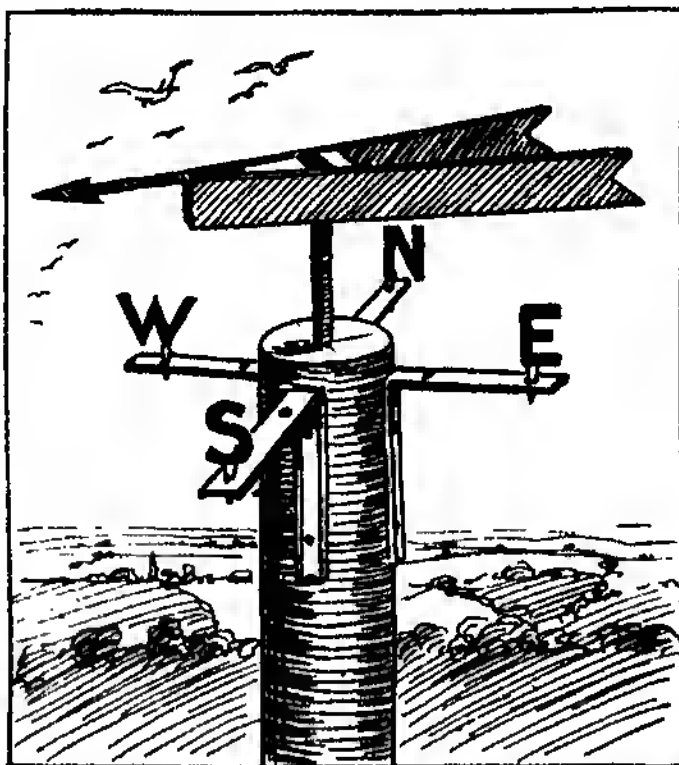
We take a wedge-shaped piece of wood as shown in picture 2, and bore a hole right through it of a diameter large enough for it to turn quite easily and smoothly on the iron rod at the top of the post. Then we nail across this hole at the top of the wedge a piece of sheet-iron, so that, when the wedge is slipped on the iron rod at the top of the post, the rod will not go right through. On each side of the wedge we screw a piece of quarter-inch board, 4 inches wide by 20 inches long, as in picture 4, and where they meet at the point A join them nicely; and bevel to a sharp angle. A metal or wooden arrow may be cut or sawn out and screwed on to the vane to act as the pointer B. We lift the vane on to the rod at the top of the post, fitting the rod into the hole in the wedge, and our weather-vane is quite complete and ready for use. Of course, in erecting the post in the garden we must see



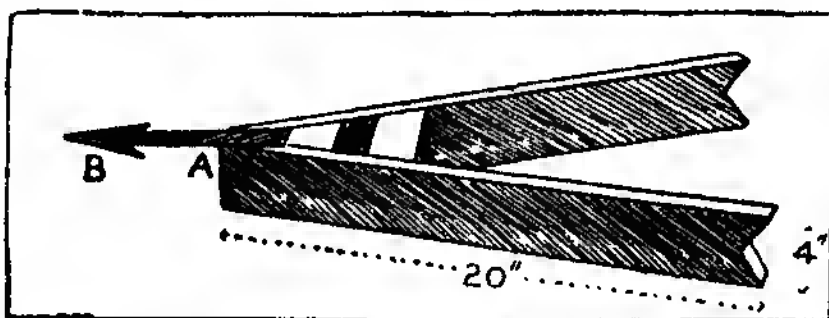
1. THE LETTERS



2. THE WEDGE



3. THE WEATHER-VANE IN POSITION



4. THE WEATHER-VANE READY FOR THE POST

to it that the N., S., E., and W. point actually to these different points of the compass. A small pocket-compass, costing a nickel, may be used to guide us in doing this quite correctly.

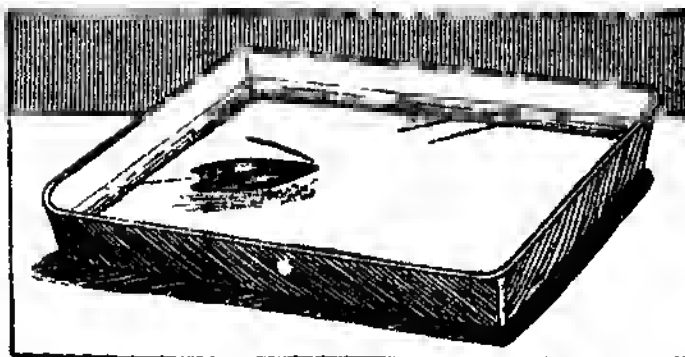
A LITTLE BOAT THAT MOVES IN THE WATER

IT is easy to make a simple little boat that will move along in the water without mechanical appliances of any kind. We cut out of a thin piece of tinfoil a shape something like a boat, about two inches in length, with a triangular nick at the end. The tinfoil must, of course, be very thin. Then we place this gently on the surface of the water so that it will float.

Now let us take a piece of camphor, such as can be bought at any chemist's shop for a penny, and from this cut off with a penknife a little piece about the size of a small

pea. We place this upon the end of the tinfoil boat at the angle of the nick, so that while resting on the boat it also just touches the water.

In a moment or two the boat will begin to move, and will continue to do so as long as the camphor touches the water. By cutting the tinfoil a little curved or like a horseshoe in shape we shall have a boat that will travel round and round in a circular dish or basin. A skilful boy will be able, with a small piece of very thin wire

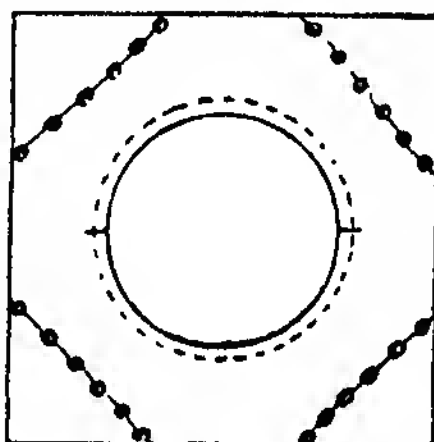


THE LITTLE BOAT DRIVEN BY CAMPHOR

and a fragment of tissue-paper, to erect a mast in the boat, with a flag at the top of the mast.

A PRETTY NEEDLEWORK BAG

A PRETTY little bag to hold fancywork can be made in a very short time by any girl who understands something of plain needlework. The larger we want the bag, the more silk is required, of course; everything depends upon the size of the work it has to hold. But if we remember that, whatever the width, the length must be just double, we shall find we shall not go far wrong. Now, having found an oblong piece of material, twice as long as it is broad, we fold it in half, and with a pair of compasses, or a saucer, draw a round on one half, and cut it out, as shown in picture 1. Then we turn the folded material on the wrong side, and sew the sides together. We turn it to the right side again, and the bag will now be a flat piece of double material. Now our stuff is beginning to look more like a bag, although it is not nearly finished. The next thing to do is to turn our attention to the round hole, which is still raw-edged. As we cannot turn in a hem here, a false piece must be put on; so we cut a little strip of the same material, large enough to go round the hole, but making it a little too big, to allow for the turn where it is joined. We sew this round the hole, putting the two right sides of the material together. When this is done,

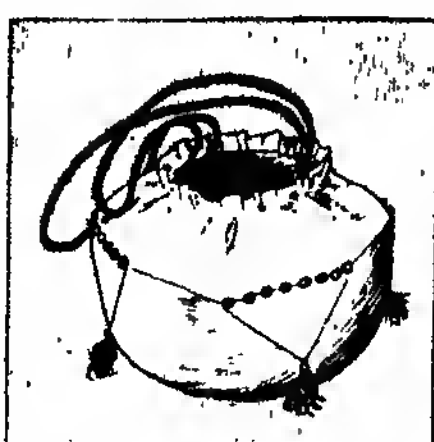


1. THE OPENING

and the ends are joined together to make it neat, we turn the false piece over and hem it down on the other side. All the plain sewing part of the bag is now finished, but the part that really "makes" the bag is yet to come.

Across each corner we draw a line, being careful to draw all four alike, and work French knots along each line, sewing right through the two pieces of stuff. To make French knots,

we twist the silk—for we must not use cotton—round the needle several times, and put the needle in where we wish it to go, pulling the silk through until the silk on the right side of the bag sets in a little lump. If this is our first attempt, we may find that we pull the silk right through, but if



2. THE BAG COMPLETE

we pull slowly a little practice will soon put us right. When we have worked all the lines with French knots, as shown in picture 1, we must run a cord through the little false hem. We cut two little slits on opposite sides of the round hole, and work them in buttonhole-stitch—with silk, not cotton—then we run the cord or ribbon through, and the bag is finished. Little silk tassels sewn to each corner make a pretty finish.

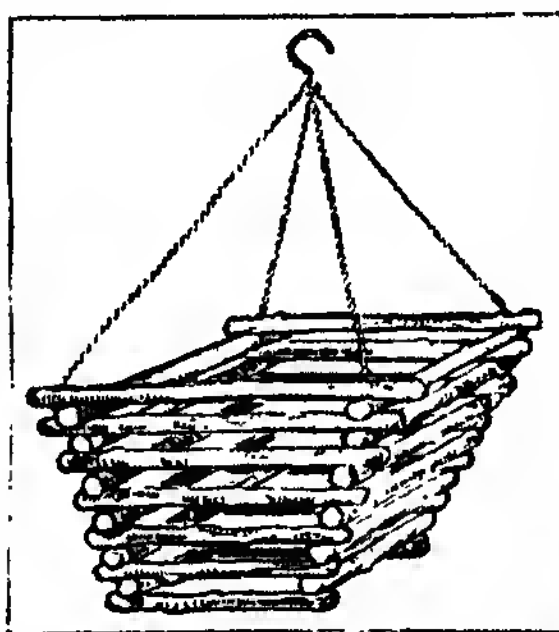
If the bag is made of thick cream silk, with the French knots, buttonhole-stitch, and cord or ribbon of primrose, the effect is charming.

A FERN BASKET FOR A NICKEL

FOR an expenditure of five cents, and with very little trouble, any intelligent boy can make a pretty fern basket. Let us collect some oak branches about three-quarters of an inch thick, and varying in length from six to twelve inches. We shall require between thirty and forty pieces altogether for our purpose.

When we take these home, we must score down the bark from end to end of the sticks, and then, having put them in a pail, we pour boiling water on them. The effect of the scalding will be to strip off the bark, leaving us nothing but the bare sticks, which are just what we want for our purpose.

Besides the sticks which we have collected, all the material we require is a little copper or brass wire, which we can purchase for five cents. Copper or brass wire is better than iron wire, because iron wire would rust through and waste away. It will be seen that the basket



THE BASKET READY FOR USE

tapers from about twelve inches square at the top to about six inches square at the bottom. Of course, we need not keep to these sizes; we can make the basket any other size that we find convenient.

We may color the sticks by putting them into water in which we have put a small amount of permanganate of potash or of logwood.

The former will dye the sticks brown, and the latter will dye them an artistic purple. We require to make holes at the ends of our oak sticks. In order to make the holes, which must be slanting, we should use a gimlet, but if we cannot make the holes without splitting the sticks, we can use a red-hot wire for the purpose, heating it again whenever it gets cool. The latter process is slow and tedious, and we should not adopt it unless we are compelled to do so. Then we thread the wires through the holes, as seen in the picture. The wires are twisted together at the top ends, from which our fern basket hangs. We may, if we like, varnish the basket after we have made it. Across the bottom we should put one or two cross sticks, so as to do away with the wide opening. Then we line the bottom and all four sides with green moss, which we can procure for ourselves in the woods. Having done so, we put a layer of stones

and gravel in the bottom and fill up the basket with good earth, in which we place the fern. When we wish to water the fern, we ought not to pour water on top of the basket, but dip the entire basket in water, letting it remain for half an hour. Rain or pond water is best, but tap water will do if either of these cannot be got.

MORE STAINS AND THEIR REMEDIES

WE have already had an article on some common stains and how to apply "First Aid" to them. Now we will have another page about some different stains and what to do for them. It certainly is not pleasant to find an ugly black ink stain on a pretty white shirt-waist, and it is not very nice to discover an acid or a mildew blemish on an article of clothing. Do you know what to do for a stain on the carpet? Well, if you read this you may learn some remedies to apply to certain stains which are liable to appear at some time or other, either on your clothes or on some article of furniture.

INK STAINS

INK stains are very common, but are not difficult to remove, if we set to work in the right way and as soon after the accident as possible. First dip the stained part in clear water until some of the ink has disappeared, then put the material in warm milk, and rub the spot gently. Milk, either hot or cold, sour or sweet, is used to remove ink from white and colored goods. If the spot is very stubborn, try oxalic acid, which may be purchased from the druggist. Use this very carefully, as it may eat a hole in the goods unless it is instantly washed out. Baking soda, too, will be found very effective also. Salts of lemon may be rubbed on after the spot is dampened with cold water, but this must be washed out again or it will burn the material. Mutton tallow rubbed on the stain before the dress is sent to the laundry will often remove it.

If ink is spilled on the carpet, sponge it up at once with warm, wet cloths, and then rub the spot well with a cloth dipped in cold milk. Wash out with clear hot water and then sift on a little cornmeal or dry sawdust, or even starch or flour.

FRUIT STAINS

FOR a fruit stain on a pretty dress, if taken quickly, first rub on a little salt or borax, and then pour boiling water through the stained part. If the stain has been on for some time, use a weak solution of oxalic acid, taking care to wash it out again immediately after. Javelle water, which the druggist has for sale, is a good remedy for fruit stains. But it must be used only on white things, as it takes out color as well as stains. Tomato-juice and salt may be applied and the dress hung out in the sun. For fresh peach stains, which are especially difficult to remove, lemon and salt seems to be the most effective remedy.

BLUEING

SOMETIMES the laundress leaves a dress too long in the blueing, with the result that there is a dark blue blemish on the dress. It is easy enough to get rid of the spot if you only know the secret. Merely soak the stain in a little kerosene, and then wash it out with naphtha soap.

TAR STAINS

IF you should rub against a carriage wheel, or brush against a greasy part of an automobile, or touch a bit of tar, you know what the result will be—an ugly grease spot which nothing but turpentine will remove. First put a little lard on the spot to loosen the dirt, and with a knife scrape off any loose particles; then sponge the place with turpentine and hang the dress on the line to let the air blow through it.

MILDEW

IF a dress is put away while it is damp or left where there is much moisture, we may find that we have a mould which is difficult to remove. If the material is white, Javelle water may remove the mildew. If this does not remove the stain, try a solution of chloride of lime. If this is used, be sure to rinse the part thoroughly, as chloride of lime is apt to rot the fabric. For thin materials like handkerchiefs use only a weak solution, but for heavier goods, dissolve eight tablespoons in one pint of water, and soak for fifteen minutes. Sometimes mildew will disappear in a few minutes, and again it may take twelve hours or even longer. Do not give up trying, then, too soon.

ALCOHOL SPOT ON WOOD

SOMETIMES an alcohol bottle left on the bureau in the bedroom will cause a white spot on the wood. Instead of trying to wipe up the alcohol when a few drops are spilled on the shelf, put a little oil (sweet-oil or linseed oil) on the spot immediately. Then the alcohol mixes with the oil and will not leave an ugly spot. Rub the place with a little kerosene, and it will look the same as ever. If perfumery or other things that contain alcohol cause spots, this same remedy will answer the purpose of removing them.

STAINS ON THE CARPET OR ON THE WALL

SOMETIMES the boys will track into the house the crude oil or dirt from the street, which leaves a disfiguring place on the carpet. If a stain from oil or soot has injured the carpet, rub the place with dry starch, flour or salt. With a whisk-brush, remove as much of the dirt as possible, and use any of these dry remedies that are suggested.

MUD STAINS

A MUD stain is simple enough to remove, you may say, but there is a word of warning to be given about such a spot. If a dark cloth dress is splashed with mud, wait until it dries, and then give it a brisk brushing with a stiff whisk-brush. If, perchance, a little mark still remains, rub it with grated raw potato, which will cause the spot to disappear.

HOW TO WORK ENGLISH EMBROIDERY

MOST girls nowadays wear soft linen collars and cuffs, and a very dainty finish to a frock they make. But although it is quite possible to buy such things ready made, many of us prefer to make our own. They are simply made, and are of many kinds. Pleated muslin edged with lace looks very pretty, and so does ordinary lace fitted on to a little band of muslin. Worked on white or colored linen, in what is known as *broderie anglaise*, or English embroidery, they really look quite charming.

Picture 5 shows a very pretty example of such work. The collar is rounded and of a "Peter Pan" shape, while the cuffs are just a straight piece. These are 6 inches long, and $2\frac{1}{2}$ inches wide. The collar is 3 inches wide, and measures 13 inches on the inside edge and 23 inches on the outside, or scalloped, edge. They are made of white linen, of the sort known as "shirt-front" linen; this kind is firm, and will not pull out of shape. Half a yard of the linen will be sufficient.

The best white thread to use in the embroidery part is D.M.C., Number 10, which costs three cents a skein, and we do our work with a crewel needle.

The principal part of the pattern of our collar and cuffs is made up of little holes worked round, decorated with an outline pattern of dots and stem stitch.

The border of our collar is scalloped and buttonholed. The little holes in the pattern are exactly like eyelet holes, only much bigger. They are not

difficult to do, but care is needed not to pull them out of shape while we are working.

The scalloping can be worked out with the aid of a coin—a twenty-five cent

piece is the right size in this case. We start from the centre-back of the collar, and mark one half-circle in pencil, using the coin as a guide, spacing out the scallops evenly round the edge. We shall find that an ordinary-sized collar will take about 11 scallops on each side of the centre one, that is, 23 scallops in all.

When we have marked the outside edges of the scallops, we must use our coin again to get the inside edge, and make each of the half-circles with a crescent shape.

Next we want to put in the circles for the holes. The point at which to place them is easily found, as one hole comes above each scallop. The end of a lead pencil will give us

the size, and, if we press it hard on to the stuff, we shall find that it leaves a clear outline, which we can pencil over. We might use a transfer for our pattern, but it is so simple that it seems a pity not to make it ourselves. The dots are next put in—three dots above each scallop-point, and three over each circle,

about half an inch above it. The branches are made by connecting up the bunches of dots, as shown in the pattern. This is quite easily done, as the little twigs are short, and we have the dots to guide us. But we must begin our twigs at the centre-back, and from there we make them branch in opposite

directions. A very black, hard pencil, cut to a fine point, must be used to mark out the pattern. Before starting, the collar should be pinned to a board with drawing-pins to keep it steady and quite flat. The pencil-marks can be kept from

smudging while we work by slightly dampening the whole pattern with a sponge and then pressing it with a hot iron. This "fixes" the pattern. Having completed our pattern, we proceed to work the scallops, cutting them away as we go along, being careful to cut only the linen. See picture 1. We must keep the shape of the crescents

very neat, and regulate the stitches to fit the shape, making the longest ones come in the middle. Buttonhole stitch is, of course, the stitch used. The "eyelet" holes must be carefully outlined by running a thread round them;

then the enclosed stuff is cut out with a very sharp pair of scissors. The hole is edged with plain over-casting stitches, worked very regularly from left to right. See

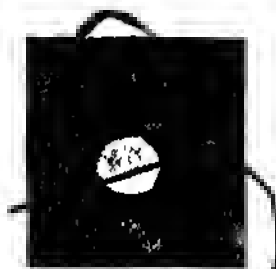
picture 2. We should remember to cut the holes a wee bit smaller than we want them to be when finished, because the working always tends to enlarge them. The twig and dot part of our

pattern is very simple to work. Each dot is composed of four little stitches placed close together; the twigs are worked in stem stitch, as is shown in picture 4. The inside curve of the collar must be neatly hemmed with No. 60 white sewing thread, and the cuffs with the same. Two small cuts can be made in the

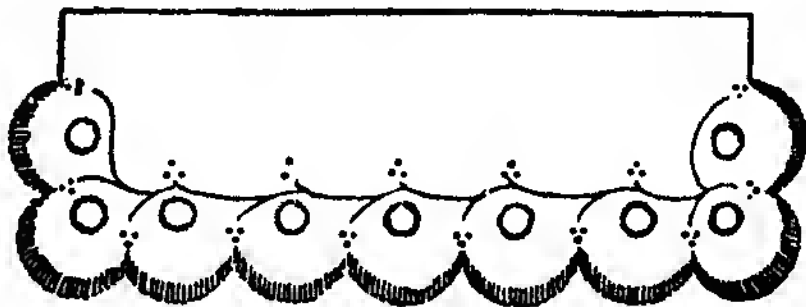
centre of the back of the collar to give a "spring" and make it lie flat when tacked inside the dress; or we can set our collar and cuffs into bands of cambric, three-quarters of an inch wide.



1. How to work the scallops.



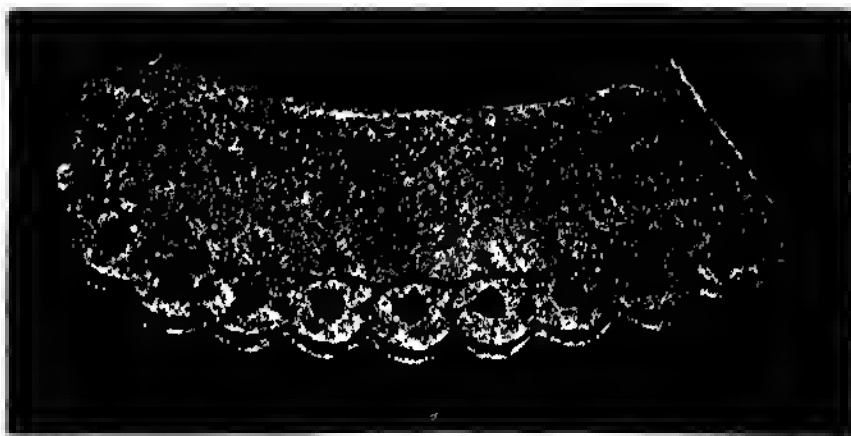
2. The hole.



3. The pattern of the cuff.



4. Stem stitch.



5. One half of the finished collar.

ROBIN HOOD AND HIS MERRY MEN

A LITTLE PLAY FOR THE SCHOOLROOM



THIS play can be acted in a garden. If acted out-of-doors, instead of having the curtain lowered, the actors disappear among the trees.

COSTUMES

Robin Hood, Allan-a-dale, and Little John all wear peaked hats with quills, green or brown tunics, and long stockings with pointed shoes, each carrying bow and arrows, and Robin Hood wearing a horn and sword; Friar Tuck, in a monk's habit; Maid Marian, in a short dress with hanging sleeves, and Rosamund, in a close-fitting gown with hanging sleeves; Simon, in a long, loose gown trimmed with fur, and a low, soft hat, and carrying money-bags.

CHARACTERS

ROBIN HOOD. LITTLE JOHN. FRIAR TUCK. ALLAN-A-DALE. MAID MARIAN. SIMON OF LINCOLN. ROSAMUND (Simon's step-daughter).

Scene: The Forest of Sherwood. Wrapped in cloaks, Friar Tuck and Little John, his hat, bow and arrows beside him, are lying asleep under a tree. Allan-a-dale is keeping watch.

ALLAN: The sun is up. Hey, there! Awake, my merry comrades.

Pokes them with his bow.

FRIAR: Good-night!

sleepily

ALLAN: Wake, rouse thyself; 'tis late! Good-night, forsooth; and thou hast slept without stirring, the last four hours!

Pokes him with his foot. Friar Tuck gets up and rubs his eyes, yawning. Allan pokes Little John, who leaps to his feet and seizes Allan by his throat.

JOHN: Ha, varlet! I've got thee.

ALLAN: Thou'rt a pretty fellow to rouse! Dost take me for an assassin?

JOHN: 'Twas an evil dream I had. Thy pardon, comrade. Ha, here comes our liege lady, Maid Marian!

laughing

Enter Maid Marian through the trees at back. Little John puts his arrows on his back.

MAID: Good-morrow, friends! Now let us make ready the breakfast.

ALLAN: There yet remains some of the haunch of venison, lady.

MAID: Bring it hither!

Allan goes out among bushes on left. Little John and Friar Tuck clear leaves from ground at foot of tree.

FRIAR: There, 'tis well!

JOHN: And here comes the breakfast.

Allan comes back with meat on a wooden platter, wine in a horn cup, and bread. He puts them on ground. Singing heard in distance.

MAID: Listen! 'Tis Robin Hood.

Robin Hood comes in from the back, and presents some wild flowers to Maid Marian.

ROBIN: All hail, my merry men! Come, let's eat! I'm as hungry as a wolf. They sit down and eat. How did you sleep after last night's carouse?

FRIAR: I slept soundly, for one.

ALLAN: Ay, indeed! I could scarce rouse him.

ROBIN: 'Tis well you are rested. I have fine sport for you to-day.

JOHN: Sport?

ROBIN: Yes. 'Tis a rich merchant, Simon of Lincoln, who is traveling through the forest with his step-daughter. Report says he has great riches.

MAID: We'll relieve him of them. 'Tis not just that one man should be burdened with so much gold.

JOHN: Yes, indeed! We will share the burden among ourselves. When comes he, master?



ROBIN HOOD AND HIS MERRY MEN

ROBIN: He should be here anon. Now list to me, and I will tell you my plan. This Simon may not be as miserly as reported, so we will give him a chance. I will disguise myself as a beggar. If he gives me alms, he shall go unmolested; but if not, then I fear he will leave us a wiser and a very much poorer man.

JOHN: Hist! What is that?

ROBIN: There they come! Hide, all of you! All hide but Robin Hood, who, wrapped in a cloak, sits under tree. Simon and Rosamund enter on the right.

ROBIN: Will my lord give a poor man some money? holding his hand out

SIMON: No! Dost think I have money to give to every idle beggar that besets my path?

ROSAMUND: Nay; I beseech you give the poor man something. I would, and gladly, if I had it.

SIMON: Silence! To Robin: Out of my way, thou wicked knave!

ROBIN: Not so fast, Simon of Lincoln, not so fast! Rises and throws off cloak and hat.

So I am a wicked knave, am I?

Others come out of hiding. Here be three more—stout, lusty fellows, too.

SIMON: Thieves, as I live!

Tries to run away. Friar and Allan-a-dale seize him. Rosamund looks terrified.

MAID: Fear not, pretty maid. No harm shall befall thee.

ROBIN: Hand over thy riches, friend Simon.

SIMON: Oh, don't take my money—my dear money, my precious gold! Anything but my gold. Take Rosamund. Only leave me my riches!

Clutches at money-bags, which Little John takes.

ROBIN: Shame on thee, coward! Wouldst barter thy step-daughter for thy miserable gold? We will take it from thee, and give it to her. Thou canst thank thy stars that thou hast gotten off so cheaply. Now go! Simon goes out on left. Maiden, thou hast a starved and ill-used look. Is thy step-father cruel to thee? Gives her money.

ROSAMUND: I—I—cannot— Weeps.

MAID: Nay, cry not! I see thou art too loyal to betray thy step-father. Come, he shall not harm thee more.

ROBIN: We will conduct thee to kinder friends.

ROSAMUND: But I have no other friends. Oh, let me stay here with you!

ROBIN: Right willingly! What say you, Marian?

MAID: The more the merrier!

Kisses Rosamund

ROBIN: Come, comrades, let us welcome her with dance and song.

They dance and sing merrily as the curtain falls, or as they disappear here and there among the trees.

THE RIGHT WAY TO DO SIMPLE THINGS

THERE is a right and a wrong way of doing everything, and it will help us in carrying out some of the simplest tasks of everyday life if we know how to set about the work in the best way. These are some hints as to the right way of doing some simple things:

TO HAMMER IN NAILS

When we are hammering nails into wood, it is a mistake to hold the hammer tightly near the head. The nail must be steadied in place with the thumb and first two fingers of the left hand across the grain of the wood, while a gentle, free tap or two are given, followed by harder and harder blows, and, as the nail gets a firm hold, it is released by the left hand and driven home.

TO COVER A BOOK WITH PAPER

The best material for covering a book is fairly thick brown paper, but sometimes glazed lining is used, and it lasts well.

When covering with paper we lay the book open in it, leaving a margin of about two inches round it, then fold this margin in over the two leaves of the cover. Next we take a pair of scissors, and cut the paper margin at the top in two places slantwise toward what we may call the backbone of the book, repeat this at the bottom, and turn the two little flaps so formed between the binding and the paper cover. Now the margin stands out in two pieces above and two pieces below, so we take the corners of the parts folded over and tuck them down behind the back, between the

binding and paper cover, as far as they will go, and fold over the four outstanding flaps.

TO MAKE BUTTONHOLES

When making buttonholes on thin material, baste a piece of India linen or muslin underneath where the buttonholes are to be. Then cut the buttonhole through both materials, and work. When finished, cut away the piece of goods underneath close to the work, and the result is a firm buttonhole.

TO REMOVE A GLASS STOPPER

When a glass stopper refuses to come out of a bottle, we must first give a few regular, steady taps downward, round the neck of the bottle. If this method fails, we may try clasp-ing it in our warm hands, or wrapping the neck round with a rag dipped in hot water. One of these methods will generally release the most stubborn stopper.

TO DRY AN UMBRELLA

When we come in out of the rain, we must dry our umbrella by opening it and placing it, handle downward, in a current of air, which will quickly dry the silk cover; but at the same time we must be careful to select a spot where the dripping water can do no harm. If we place our umbrella in the stand without drying it, the water will in turn rust the ribs and rot the cover at the end of the stick. We must always remember never to roll up our umbrella when it is at all damp, otherwise the silk will very soon get cut and wear out.

A LITTLE PICTURE ON CANVAS

THOSE of us who have a grandmother have most likely seen the "sampler" which she did when she was a little girl. It is years and years old, and it hangs on the wall in a picture-frame. It has her name on it and the date, and some queer birds and animals, possibly some trees in pots, and some sprigs of flowers. Round it all is a border, and the whole picture is worked in wool on canvas. Now we are going to learn how to do a small sampler or canvas picture for ourselves—much smaller than grandmother's, but quite large enough for us to begin with.

When finished, it will be about the size of a postcard, and the picture on it is made up of a basket of forget-me-nots, tied with a bow, while underneath are perched two little yellow birds. As a great many shops make a speciality of selling little black or dark-brown frames in post-card sizes for ten cents, we shall be able to get our canvas picture framed at no great expense. In fact, it would make a nice little present for someone going away, with its very appropriate message of "Forget-me-not" suggested by the flowers. Now to begin. We shall want very few materials—just a quarter of a yard of double-thread canvas, costing twenty cents per yard, some colored wool, and a canvas needle. The wool can be obtained

in dime balls at almost all the fancy-work shops, and the needles are like darners with blunted points. They are very cheap—about six a dime. The colors of wool used are two shades of green, two shades of blue, one pink, one yellow, one brown, and one deep cream for the back-

In picture 1, which shows us the design from which we are to copy our pattern, each square represents, in the actual work, a cross, and the whole picture can be copied in this way—that is, by making a cross on the canvas for each square in the position shown in the design. The stitches

must completely hide the canvas. In picture 2 we see how a cross-stitch is made. We are going to copy the whole of our picture from the design, and afterwards fill in the background with another color.

Picture 1 gives us the pattern from which to work; this is the "key" to it:

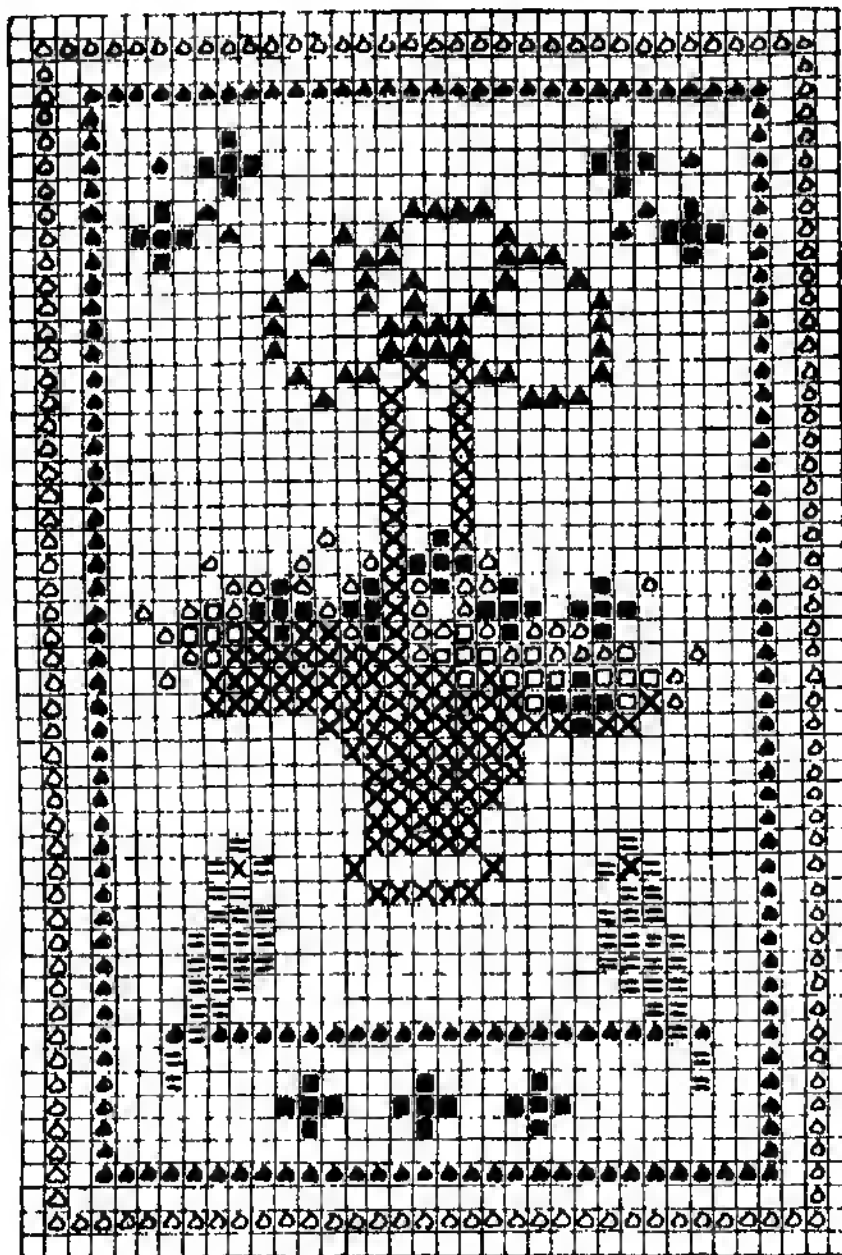
Dark green —filled-in leaf.
Light green —outlined leaf.
Dark blue —filled-in square.
Light blue —outlined square.
Brown —cross.
Yellow —two lines.
Pink —triangle.
Cream —not shown.

The cream for the background is not shown, as all the empty squares left when our pattern is finished are to be filled in in this color last of all. We fold the quarter yard of canvas into three, and cut off one piece, which will be a square of about nine inches. We must turn the edge in half an inch all round, and tack

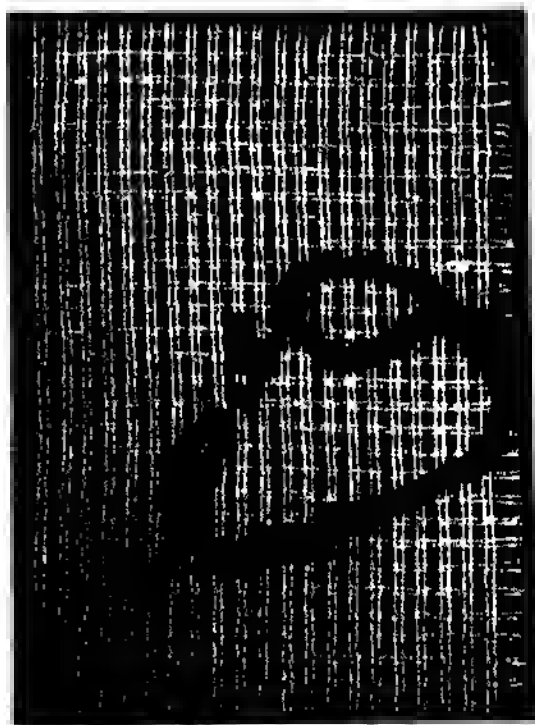
it down with white cotton. This is done, of course, to prevent the canvas fraying out, and also to prevent our wool from catching in the rough edges. Now we have to find the centre of the square. If we feel we cannot guess it near enough, the best way will be to double the can-

vas diagonally—from corner to corner—crease it, and then unfold it, and do the same from the other two corners. Where the creases cross will be the centre, or, at any rate, it will be quite near enough, as our canvas will leave plenty of margin.

The best way to begin to work our sampler is to start the centre of our picture in the centre of our canvas. If we look carefully, we shall see that the forget-me-not which comes

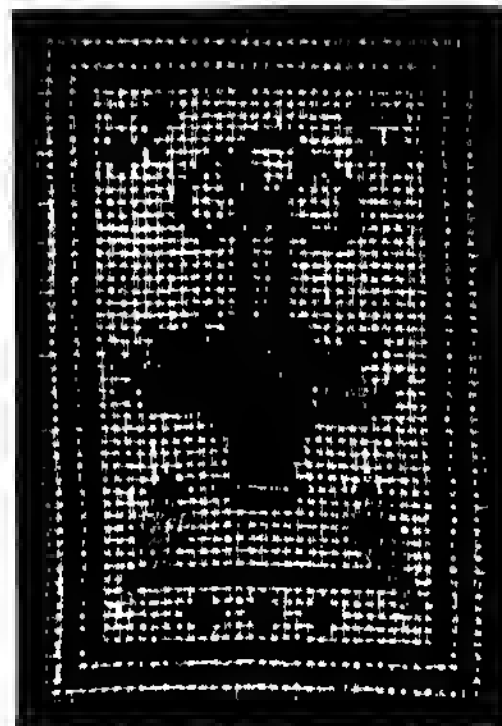


1. The pattern, worked in seven colors.



2. The cross-stitch.

ground. Pretty soft shades should always be chosen, and they must, of course, harmonize.



3. The sampler.

under the handle of the basket is nearly in the centre. So we will choose this to begin with, and make it of blue wool in five crosses. Now we take a thread of green wool, and make a cross on the right of the outside petal of the forget-me-not, then one cross immediately below the last, and then one to the left of that, and one again below. The next cross is below the last, but one square to the left of it; then we make another below, but one square to the left, and then three crosses upwards, which brings us to the forget-me-not again. We take the blue wool again, and make the forget-me-not which comes under the first one, but one square to the right of it. Here are two flowers close together; we make one a light blue and one a darker blue, and then proceed with the green leaves in a similar fashion, just counting the squares. The handle of the basket is worked in brown, starting from the right of our first forget-me-not. The basket

comes next, as shown in picture 1. At the bottom of the basket a row of five squares is left to show the rim. These are to be filled in when the background is made. We work the bow in pink, and from this we can easily count to the corner sprays, which are worked in blue and green. For the bar on which the birds are seated we can start from the centre and work outwards—five squares down from the bottom of the basket, and twenty-four for the bar. Next, we work the two birds, and, last of all, the two borders. The birds' eyes should be worked in brown. The birds are made in canary yellow, and the bar in green. The borders also in green, of two shades. We must not forget the three blue flowers below the bar. Picture 3 shows the sampler finished, except for the filling-in of the background. When the background has been filled in with cream-colored wool, we press the picture on to the wrong side with a warm iron.

A SIMPLE GYMNASTIC TRICK

TAKE a long stick, such as one of the larger kinds of broomsticks, and place one end of it in the angle caused by the wall and the floor. Then, holding the other end, pass your body under the stick in the space between your hands and the floor. The problem is to do this without letting go of the stick, and without removing its end from the angle where it is fixed.

Those who do not know the trick, will invariably stand facing the wall, but if an attempt is made to pass under the stick in this position the performer will over-balance himself. The correct attitude

for those who wish to be successful is to have the back to the wall, the feet and the bottom of the stick forming an isosceles triangle. Then, grasping the stick firmly, and using its lower end as a pivot, it will be quite easy to go under and bring the head and shoulders up again on the opposite side without losing the balance.



This makes an excellent trick for an indoor gathering or a garden party. The stick used must not be so thick that it cannot be grasped firmly, nor must it be so thin that it will easily break.

ANSWERS TO PUZZLES

ANSWERS TO PUZZLES ON PAGES 5523 AND 5524

1. Aspirate, pirate, irate, rate, ate, at, tear, tea, ear, era, rat, tar.
2. G olf
L ily
A pe
D agger
S ack
T oulon
O nyx
N ora
E lm
3. I ate next to nothing!
4. 96 triangles.
5. Tennyson.
6. Rainbow.
8. Pen-man-ship.
9. Crow and parrot transformed, become prow and carrot.
10. (1) Pink; (2) Erica; (3) Iris; (4) Anemone; (5) Daisy; (6) Pansy; (7) Lobelia; (8) Harebell; (9) Rose; (10) Gentian.
11. Because the year 1888 began on a Sunday and ended on Monday, and 1889 began and ended on Tuesday.

7. A dventure R
L e A
E ntra P
X anthipp E
A riost O
N u F
D o T
E ac H
R emors E
P ul J
O ntari O
P aralyti C
E I K

12. (1) Chase; hovel; avail; Seine; Ellen.
(2) Tame; age; mean; Erne.

13. A piece of coal. When it sleeps on the wing. An L (ell). Short. Noise. Make the vest first. A law-suit.

14. The farmer added on each side of the field a triangular piece of land, its long side the same length as the side, its two short sides each one half the length of the diagonal, of the original field.

SOLUTIONS OF THE PUZZLE NAMES ON PAGE 5453

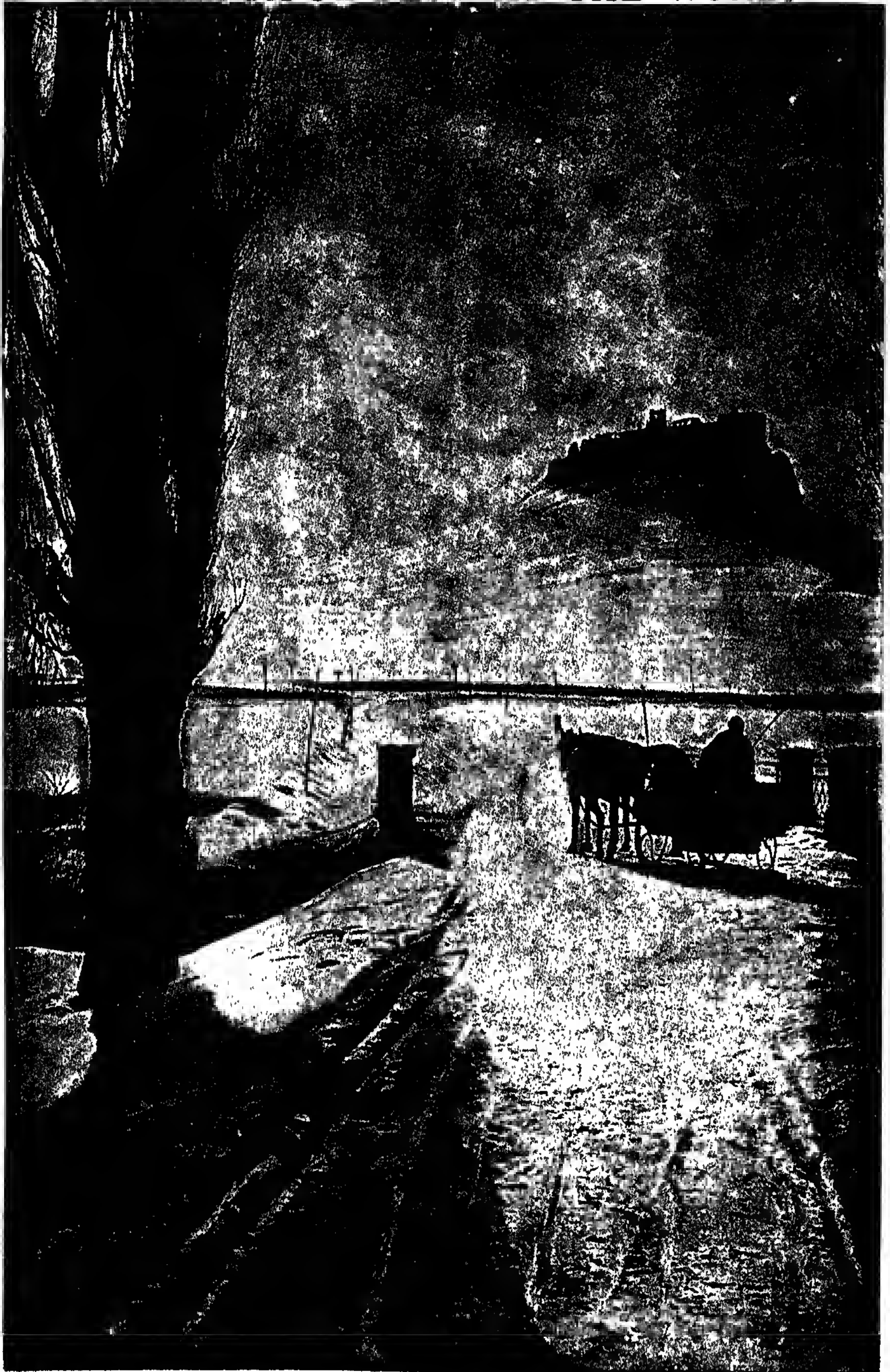
1. Hunt the slipper. 2. Croquet. 3. Cat and bat. 4. Hockey. 5. Hide and seek. 6. Hop-sotch. 7. Football. 8. Leap-frog. 9. Cricket. 10. Hare and hounds. In some cases the name is spelt by the pictures, and in others it is represented by the sounds of the words.

ANSWERS TO THE "WHAT IS IT?" GAME ON PAGE 5449

- (1) Pumicestone, (2) a snowflake, (3) chalk, (4) the heart, (5) a sponge, (6) electricity, (7) a pearl.

THE NEXT THINGS TO MAKE AND DO ARE ON PAGE 5735.

A BEAUTIFUL PEEP AT THE WORLD



This beautiful Castle of Szepes is a famous landmark in the Carpathian Mountains.



Budapest and the river Danube as seen from the royal castle.

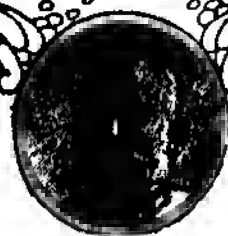
THE LAND OF A THOUSAND YEARS THE BEAUTIFUL HOME OF A HUNGARIAN NATION

WHEN the English, about the middle of the last century, were struggling for reforms and rights of all kinds, so that the British nation might be free in fact, as well as in name, they were not alone in their uprising. It was only part of a wonderful wave of feeling that was passing over the wide plains and mountain ranges of all Europe and far beyond; and nowhere was this wave of feeling more rousing, more strong, than in the central country of Hungary.

The depth of the interest felt in the struggle we know by the reception given to Louis Kossuth, one of Hungary's patriots who visited England and the United States in those stormy times. Seldom have both countries been so excited over the presence of a man. This knowledge adds to our interest when we learn that we are to pay a summer visit to the land he sought to free.

But let us consider how we are to make our journey. No doubt we all have different views as to the route by which we should like to reach Hungary. The good sailors will think it delightful

CONTINUED FROM 5560



if a steamer can take them for a cruise through the Straits of Gibraltar into the beautiful Mediterranean, and along the fairy-like eastern shores of the Adriatic, all islands and bays and mountains, before landing at Hungary's busy port, Fiume. It is here that the land-girt country—larger than New Mexico—stretches down, a finger, as it were, to touch the salt water. Twelve hours' railway journey by mountain and valley and along the shores of Lake Balaton, which is the largest lake of Central Europe, and is fifty miles long, connects Budapest, the capital of the country, with its port, Fiume.

More adventurous members of our party are sure to suggest traveling from Hamburg or Bremen across the great north plain of Germany by Berlin and Cracow, and dashing, as the Huns did a thousand years ago, through the passes of the Carpathians. As we look for the exact spots where the terrible horsemen swarmed through, we realize the grandeur of this mountain rampart, which is in many places almost as high as the Allegheny Mountains.

Springing from the gate where the Danube—written Duna in Hungarian—enters the country on the west, the mountain range girdles the great central plain in an immense oval, which sweeps, first north, then east, and then, bending south and west, helps to form the famous Iron Gate, where the mighty river leaves the country on the east.

THE BLUE ROLLING DANUBE

We feel dazed when we think of all the beauties and wonders to be seen in those mountains, but first we would see the blue rolling Danube. Our hearts sing as we think of it. There is our route: let us take train to Vienna, thirty-six hours from London, and approach Hungary by steamer on the wide brimming river. It is but four hours by rail from the Austrian capital to that of Hungary, but we are in no hurry; we want to glide quietly into the heart and soul of the country by the magnificent waterway that leads through it, and to have time to ponder over the outline of a picture that we hope to fill with color and life before we leave.

Our outline begins with the daring Magyars, who, under Almos and his son, Arpád, crossed the Carpathians in the last years of the ninth century, settled in the great central plain, and were ruled by native kings for many centuries. In the middle of the sixteenth century Ferdinand of Austria, King of Bohemia was chosen as king. He was not, however, acknowledged king by all the nation, as we have read in the story of Austria. For over one hundred and fifty years the country was torn by dissension, ravaged by war, and crushed by oppression, and it was not until the power of the Turks had waned, at the end of the seventeenth century, that the whole of Hungary was reunited. Even then the struggles to keep its ancient independence were not ended, for the Hapsburg rulers wished to make it a part of Austria.

EQUAL STATES SIDE BY SIDE

The struggles were crowned with final success about the middle of the nineteenth century, and to-day Austria and Hungary stand firmly as equal states, side by side, the government of each being quite distinct. They have a ruler in common; their sovereign,

Charles Francis of the Hapsburg family, is King of Hungary as well as Emperor of Austria. Also they have agreed to have a common army and navy, common ambassadors to other countries; also, for the present, they have customs arrangements in common.

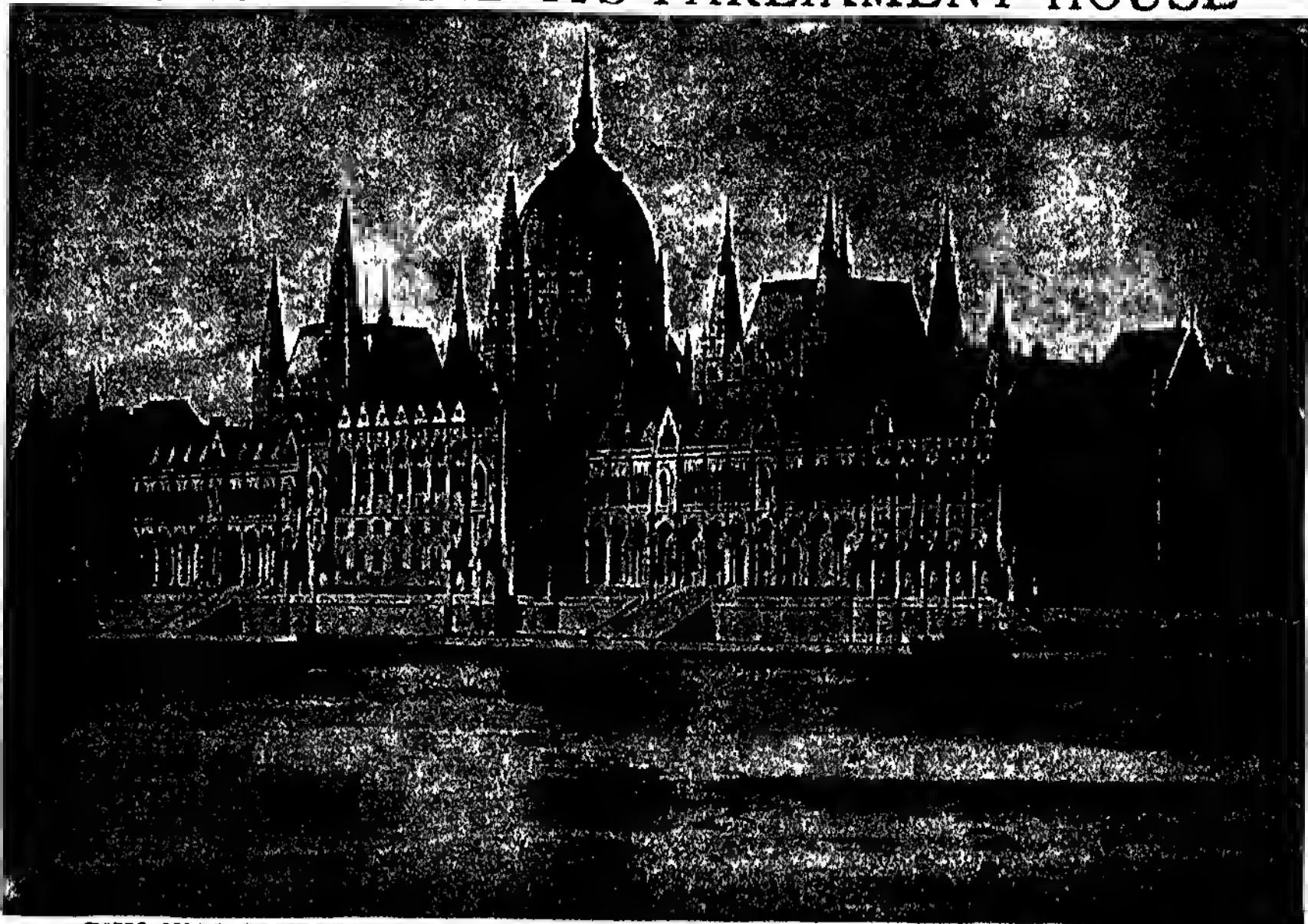
But our steamer is hurrying us on out of Austria, and we are soon at the Carpathian gate where the Alps and the Carpathians face each other. There are stories of battle in every hilltop castle, in every old town and tower that we pass, and we are soon at Pozsony, whose German name is Pressburg, an important town of Hungary. We must stop a day to see it. The old castle in which the Empress Maria Theresa of Austria, in the eighteenth century, made her striking appeal to the Hungarian nobles, with her boy in her arms, was burned down years ago. But the sounding words shouted by the brave nobles as they flashed out their swords in answer to her appeal, "Our life and our blood for our lord and king, the crown and our country!" still seem to echo round Pressburg. From the walls of the fortress we get a magnificent view, as far as Vienna, and spend some time looking over interesting churches, and the cathedral where many of the Hapsburg kings of Hungary were crowned.

We take up our journey again, and before long stop at Gran or Esterzom, for here is the largest cathedral in Hungary, with its priceless works of art, the seat of the Primate, or chief archbishop. St. Stephen, the first Christian king of Hungary, is said to have been born at Gran, and he was baptized and crowned here.

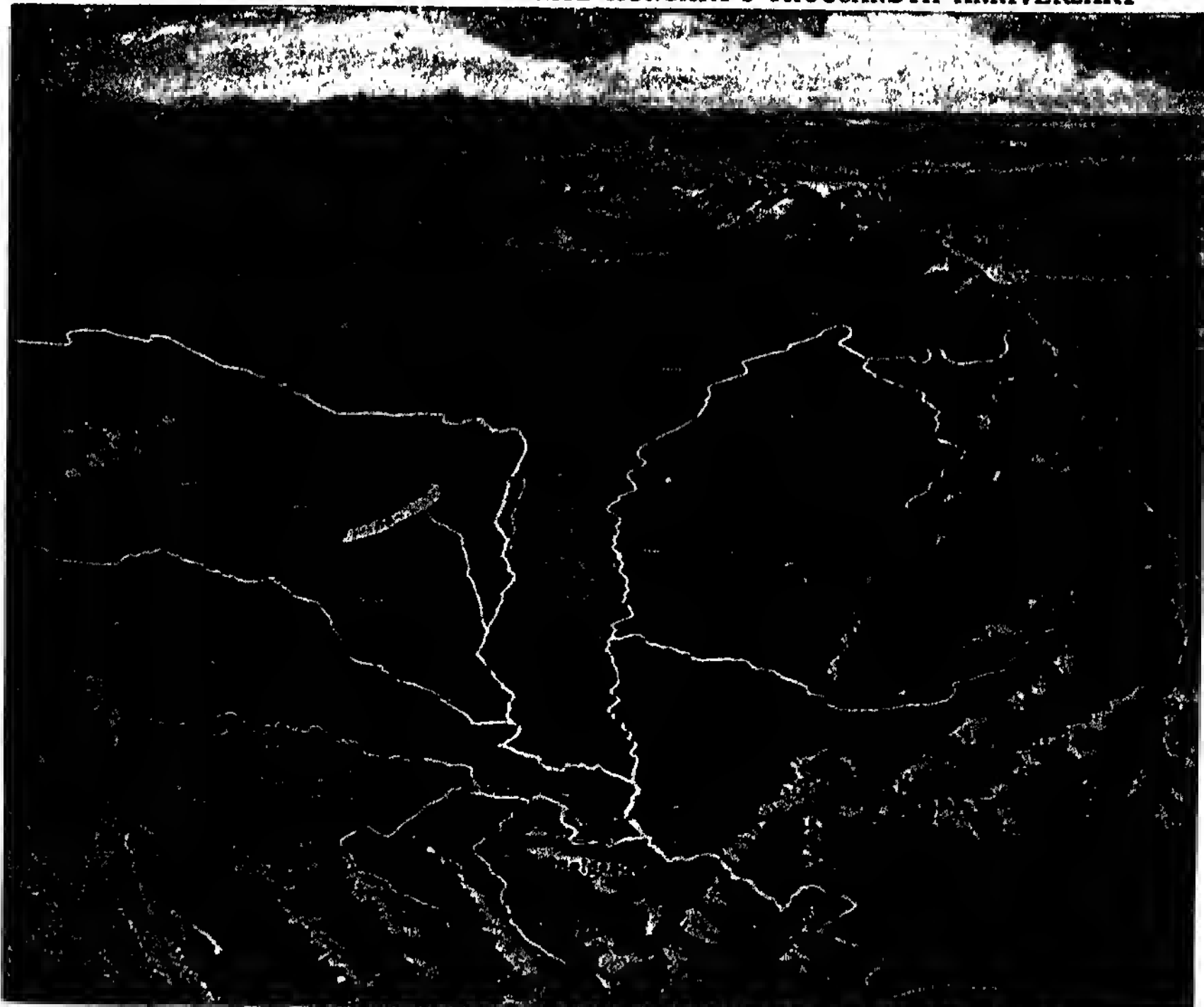
THE PEOPLE'S LOVE FOR KING STEPHEN

It is not easy for us to realize the deep love and admiration the Hungarians still have for this king of theirs who lived nearly a thousand years ago. He was the great-great-grandson of Arpád, who had led the Magyars over the Carpathians into the great plain. Stephen's chief work was to make Christianity the ruling religion in the new Fatherland. He so civilized the state over which he ruled that the old roving, Eastern spirit—so strong in their forefathers, who saw no harm in robbing and raiding—was gradually subdued, and in time the Hungarians, together with

HUNGARY AND ITS PARLIAMENT HOUSE



THIS WAS COMPLETED TO CELEBRATE HUNGARY'S THOUSANDTH ANNIVERSARY



A BIRDS EYE VIEW OF HUNGARY, SHOWING THE MOUNTAINS AND RIVERS

other races who settled as welcome colonists within their borders, slipped into their place in the European family of nations.

A little beyond Gran, the Danube turns abruptly southward, and we come to the heart and capital of the kingdom, Budapest. We enter it in the dusk of evening. From afar we have seen the golden haze of the thousands of lights in the clear air, and as we draw near and watch the glint and glimmer of the lamps on the embankments and bridges reflected in the dark water of the broad river, we cry out in delight, "We have sailed into fairyland indeed." But no; solidly against the darkening sky stand out the hills and the noble buildings that we look forward so much to seeing. What a situation we discover in the morning light! For several miles on both banks of the river, connected by many magnificent bridges, stand houses and churches and great public buildings. What can we see first?

Let us mount the steps up the hill of St. Gellert, the last spur of the Alps, and stand beside the impressive figure of the missionary holding the cross aloft. St. Gellert was killed soon after St. Stephen's death in the final struggle of the Hungarians with heathenism.

A KING'S HAND AND A BURIED CROWN

What a view! The rolling Danube is in the midst of the picture, bearing many steamers and yachts, and little boats and barges and rafts on its sunny bosom, and the homes of thousands, great and small, crowd beside it, on the hilly slopes of the right bank, on the flat borders of the left. Not far away is the huge pile of the royal palace, where the king lives when he visits his capital. Very splendid are the great halls and rooms and courtyards that now cover the ground so fought for through the centuries; on the fortress-hill of Buda.

In the Chapel Royal of the palace is kept the nation's most treasured relic, the embalmed right hand of St. Stephen, which is carried round and shown to the people each year on St. Stephen's Day. Also, in a strong-room in the palace are other precious treasures—the sacred crown, the lower part of which was given to St. Stephen by Pope Sylvester II. in the year 1000,

along with other emblems of royalty. They may well guard the crown carefully, it has had many adventures, and has been carried hither and thither. Louis Kossuth had it buried for safety for four years, at the extreme end of the kingdom, where the Danube leaves it, near the Iron Gate.

THE BITTER FIGHT FOR FREEDOM

The Parliament building, on the left bank, with its fine dome and many spires, looks most imposing from the river. Here the members elected by the people meet to make laws and arrange taxes, and discuss matters of government in much the same way as is done in our Capitol on the Potomac. The constitution of the Hungarians is many times as old as ours, and their fight to maintain it has been bitter and full of suffering. It is based on a decree, called a Golden Bull, which was made by Andrew II., a descendant of Arpád. This decree was made in 1222, only seven years after Magna Carta.

After Hungary fell under the dominion of the Austrian rulers, strong efforts were made to reduce the country to the state of being an Austrian province. But though the people seemed to be almost broken in spirit by the long wars which had impoverished their country, they held tenaciously to their rights. In 1848, when a great desire for freedom broke over all Europe like a wave, they tried to free themselves from Austria, but were unsuccessful. They were defeated and the War of Independence left them in a state of subjection worse than before. They did not give up, however, and in 1867 an agreement, called the *ausgleich*, which gave back the right to govern themselves, was made. The Emperor Francis Joseph, who was crowned king in June 1867, won their hearts, and when he died in 1917, the Emperor Charles Francis succeeded him without question.

A fine service of electric cars, or a comfortable cab with two horses, takes us about the streets, to see the beautiful Town Park and the National Museum, to the magnificent Opera House, to St. Stephen's Cathedral and the St. Matthias Coronation Church; to Margaret Island, a delightful fairyland of shady gardens, with rose hedges and a waterfall and some interesting old ruins.

THE HOMES OF THE HUNGARIAN PEOPLE



HUNGARIAN WOMEN CRUSHING MAIZE IN A SIMPLE TYPE OF HAND-MILL



MAIZE HANGING FROM A COTTAGE ROOF



INSIDE A MOUNTAIN COTTAGE



PEASANTS OF CROATIA INSIDE THE PRINCIPAL LIVING-ROOM OF THEIR COTTAGE

We feel deep interest in the monuments and statues scattered over the city, for here we are brought face to face with the noble sons of Hungary who have helped to make her great. Their names are difficult to pronounce and to remember, as, indeed, most Hungarian words are, but we are determined to master them.

STATUES OF KINGS AND HEROES

There is, first of all, the fine bronze statue of St. Stephen, holding the double cross like the one borne before the Pope, near the Coronation Church; and not far off is that of the brave John Hunyadi, the great Turk-beater, who performed miracles of daring against hopeless odds. The museum, in the Town Park, which is reflected so beautifully in the water of the lake, is a reproduction of John Hunyadi's castle. Another statue is that of King Matthias, who held such a splendid court in Buda in the fifteenth century, and had such a good name for justice. "King Matthias is dead, justice has fled," they cried. How we should have liked to see his library, the Corvina, containing thousands of magnificent books, which were carried away or destroyed by the Turks! It is grievous to think of the Crescent floating above the fortress of Buda for 150 years, and the country round lying desolate and ruined. But what a healer is Time! In the National Museum can be seen several of the most valuable of the manuscripts of the Corvina, sent back by Sultan Abdul Hamid I.

The great poets of Hungary are not forgotten by the sculptors; among them are Petöfi and Arany, pronounced Paterfee and Aurann. Petöfi it was who stirred the souls of the people in the great awakening times of last century, and he was killed fighting for freedom. It was Arany who sang so grandly the old legends of the Huns, of the Christian struggles against the Turks, and who translated Shakespeare so beautifully. We make our way out to the cemetery to lay flowers on the grave of the great leader, Louis Kossuth, who knew our great-grandfathers at home. Statues of him abound all over Hungary, as do those of Count Széchenyi—which is pronounced Saicheny—who did good to his country in countless ways.

It was Francis Deák—pronounced Dayaak—who arranged the important details which, in 1867, brought final peace between Austria and Hungary. Statues of many of the patriots whom Hungary can never forget are placed in the streets and squares. Especially we notice the "Honvéd" memorials, of which there are so many, dedicated to the brave National Guard, which did such fine service in the middle of last century when the closing scenes of the great fight for independence were being successfully played out.

THE LIFE OF THE PEOPLE

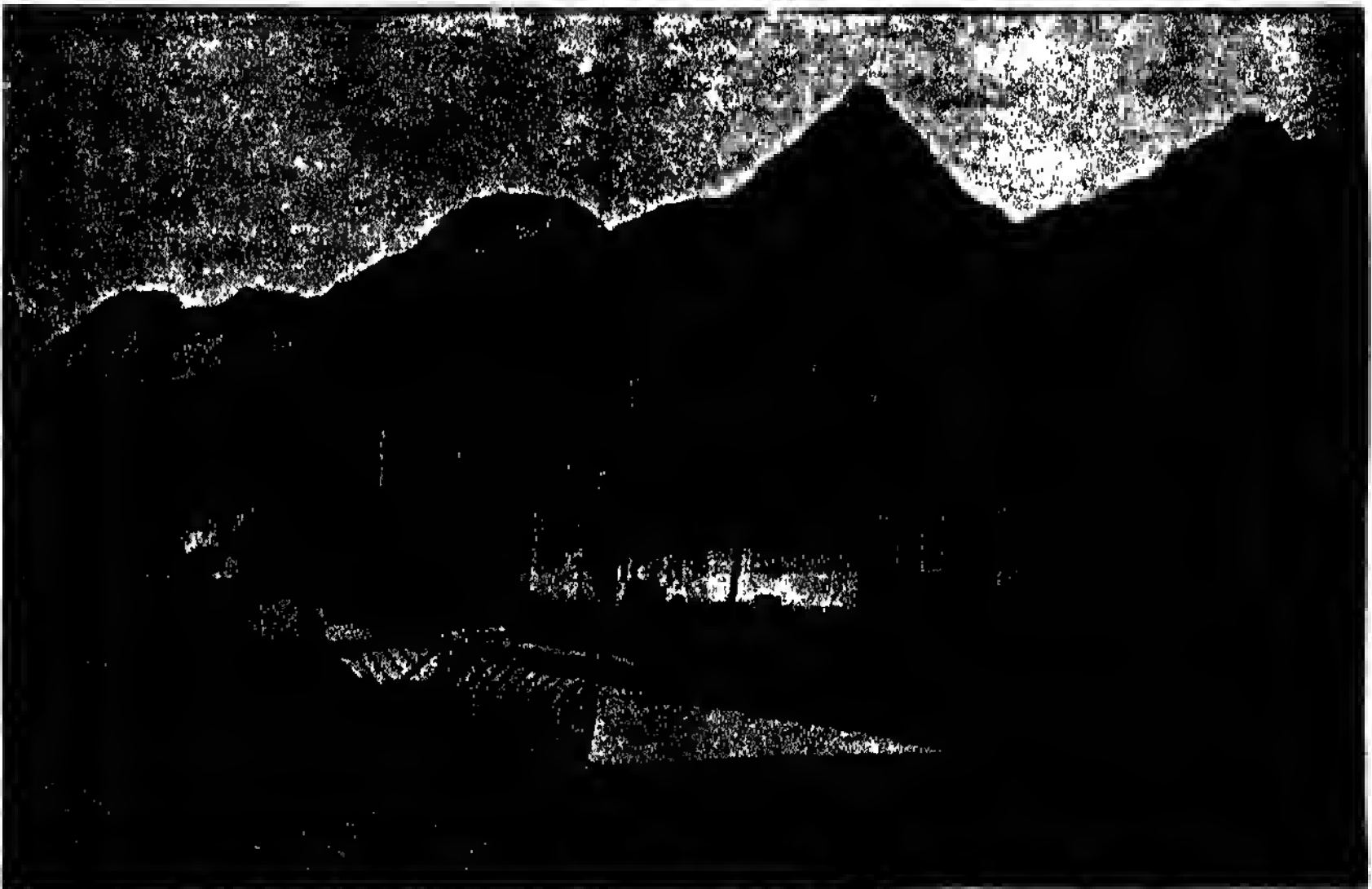
The Millennium memorials are also scattered everywhere. They bring to mind the thousandth anniversary of the existence of the Hungarian nation. A great festival was held in 1896 to celebrate not only the dash over the Carpathians a thousand years before and the fact that the sacred heritage of freedom in constitution, laws, and government had been successfully handed down through the centuries, but to celebrate also the advance in education and in reforms for the good of the people which have followed in the wake of peace.

We are very unwilling to leave Budapest, for there is much to see, so many museums and fine excursions; but nearly all Hungary still lies before us, and a rest on our steamer will be welcome as we pass by the river into the great plain, the very soul of the country. Far away it stretches till it meets the edge of the great dome of sky on the round horizon. As we pass along southward, there are endless variety and interest in the scenes before us. The countryfolk look gay in their national costumes; the great fields of waving grain remind us that Hungarian flour is excellent; the marshy swamps and high embankments speak of the overflowing of waters, and the great skill of the Hungarians in regulating their flow. At Mohács we see women peacefully washing their clothes at the riverside, and fetching water in jars hung on a sort of yoke on their shoulders. The field of Mohács is a dread name in Hungarian ears, for it was there that the king, the nobles, and nearly all their followers, perished in deadly fight with the Turks, who then rushed triumphantly on over their dead

THE MOUNTAINS AND SEAPORT OF HUNGARY



Fiume, on the Adriatic Sea, Hungary's chief seaport.



A Typical Hungarian village, showing the stern Carpathian Mountains beyond.



A wonderful ice cave at Dobosina, the floor of which is made up of 100,000 tons of ice.

bodies to Buda. About a century and a half later another battle was fought at Zenta, which put an end for ever to the hated rule of the Turks.

AT THE KEY OF THE DANUBE

We feel special interest in the junction of the canals, made to shorten the winding of the river, and to cut across the plain between the Danube and the great—wholly Hungarian—River Theiss, as long as the Rhine. The Theiss's slow waters, which drain, with many windings, the great plain and the Carpathians behind, join the Danube from the north after it has turned eastward. The Drave and the Save come from the west, bearing the waters from the cold, snowy Alps.

The Save joins the Danube at Belgrade, the capital of Servia. The hills above the city have looked down on many conflicts since the first fortress was built twenty-two centuries ago on the rocky ridge that juts out between the two rivers. It was long looked upon as the "key" to the Danube, and the city has changed hands many times. It was finally given over by the Turks to the Servians in 1866. It was made the centre of the Servian government and flourished and grew rapidly until in the Great War it was taken by the Germans and Bulgarians.

THE IRON GATE OF MIGHTY ROCKS

The way gets more and more exciting and wonderful the farther we go. Now the bed of the river is wide and shallow like a large lake, now it is narrowed between steep rocks. Beautiful valleys open up on either side as the rivers hasten to join the main stream, often with the roar of cataracts. We feel quite afraid lest we run against the black rocks standing up from the bed of the river.

When we come to the Kazan Pass we are overwhelmed with the nearness of the steep mountain-sides reflected in the dark water beneath, and with the cliffs and their waterfalls, on which rainbows shine in the sun. Too soon we are out of the pass and at the Hungarian frontier-town Orsova, near which Kossuth buried the crown. A little way beyond Orsova is the famous Iron Gate of mighty rocks, and the canal through which the ships, with

their black smoke, pass. We can hear the roar of the water through the gate afar off. There are many remains of Roman days scattered up and down Hungary, but none more impressive than the remains of the tremendous works of road-making they achieved about this part of the Danube. It was Hungary which undertook the enormous work of removing the great dangers of the Iron Gate, and making it fit for the shipping of Europe to pass through. The work took eight years, and was opened for traffic in the millennium year.

We would fain linger in Erdély, the "forest-land" called Transylvania on our maps, that beautiful country of mountain and wood often spoken of as the Hungarian Switzerland, for we love pine forests, caves, old towns, and beautiful embroideries; and we would like to visit Kolozsvár, the birthplace of King Matthias.

THE PEOPLE OF THE PLAIN

But the great plain calls, and for days we move from place to place, by train, and by alarmingly rapid driving along tree-bordered roads, through rich fields and green woods, by towns and hamlets and farms, till we find ourselves at Debreczin, the capital of the Lowlands. It is a fine large town of about 100,000 inhabitants, and we are never tired of watching the people in their picturesque costumes, or of examining the delightful things to be bought in the quaint shops.

The sympathetic and graceful hospitality of the people is a pleasant memory for life, and it all seems to fit in with the beauty of those boundless plains under the widest expanse of sky we have ever seen. The model farms are wonderful, and on our daily excursions we grow quite familiar with the sight of the herdsmen in their heavy frieze coats, with their lovely charges, the foals and horses, that, when startled, seem to fly like the wind. These herdsmen, riding as if one with their steeds, are the last remnants of the original wandering Magyar folk who first settled in Hungary. They know no fear. Besides the horses, there feed on the plains great numbers of cattle, some of the beautiful milky-white kind with wide-spreading horns, whose ancestors came into the country

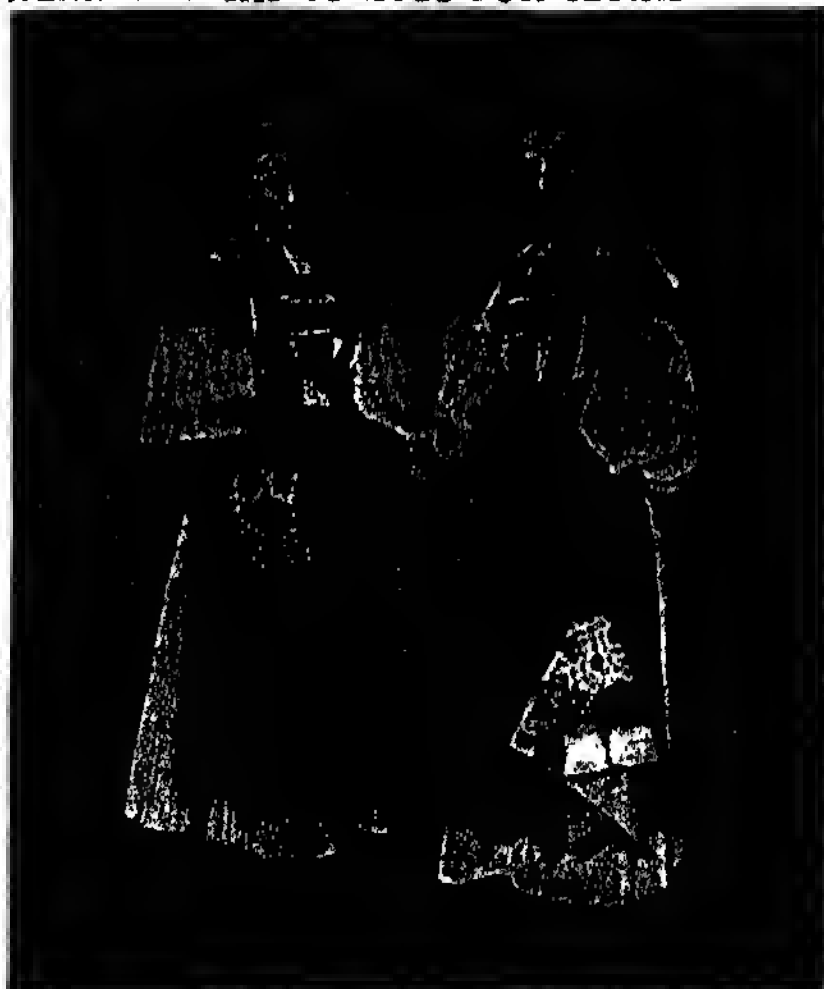
TYPES OF THE PEOPLE OF HUNGARY



A HUNGARIAN SHEPHERD OF THE LOWLANDS IN HIS CURIOUS FUR CLOAK



PEASANT GIRLS OF THE HIGHLANDS



LOWLAND GIRLS IN HOLIDAY COSTUME



FARMERS WEARING THE ORNAMENTAL CLOAK WHICH IS THEIR NATIONAL COSTUME

with the Magyars. There are also herds of shaggy black buffaloes, and flocks of lovely black and white sheep.

THE CHARM OF A THOUSAND-YEAR-OLD LIFE

As we go along, we feel it almost sad to see the wide, grassy plains growing less as more and more land is ploughed and sown, and to note how often the sound of the tinkling cattle-bell, the crack of the herdsman's whip are drowned by the shrill whistle of the train. But there is still much left of the charm of a thousand-year-old life. It is only here and there that the smoke of tall factory chimneys spoils the delicious, bright, clear air with its scent of grass and meadow flowers, and the people have still the old-time virtues of hospitality and love of Nature. The great enjoyment of the evenings is listening to the soul-stirring legends and poetry of the plains, and to the thrilling gipsy music which accompanies the slow and fast dances which make gay the leisure time of the peasants, when labor is done.

We cannot leave Hungary till we have had at least a glance at the Carpathians, so we make our way northwards, past the vine country on the slopes of the low hills, past the ore hills, where furnaces and smoke in many mining towns and villages mark the doorways into Mother Earth's rich storehouses.

CAVES, MOUNTAINS, FORESTS, AND LAKES

We must turn aside to visit the marvelous ice cave of Dobsina, where we can skate on a vast real ice floor as smooth as a mirror in the hottest weather, surrounded by walls and roof of glittering, dazzling, unearthly beauty. Wonderful, too, is the stalactite cave. Five hours is all too short a time in which to see the halls and arches, the columns and pillars, all wreathed in the finest traceries of lace in stone.

At last we arrive at the High Tatra district. It is not unlike Switzerland, but there are no glaciers, no magnificent, absolutely still and frozen solitudes. The mountains are not high enough for that. But we mount the High Tatra by cog-wheel railways, and gaze far and wide at glorious views over jagged hills and valleys, over countless "eyes of the sea"—the little mountain tarns—over splendid forests. There are

fine hotels at the many health resorts in the district where people come from all over Europe to enjoy these delights, to boat on the lovely Lake Csorba, to drink the mineral waters, take the baths, and fill their lungs with the pure, life-giving air. Winter sports are skating, tobogganing, skiing in bright, still sunshine under a blue, cloudless sky.

It is but a short railway journey from the Tatra to Budapest, where we look round the museums again, for we want to look at the cowboy group again, and at specimens of the ores from the mines, and many prehistoric and Roman remains from spots we have visited. Then we say a too brief good-bye to St. Gellert, to St. Stephen, to John Hunyadi, to Széchenyi—often called the greatest Hungarian—and his fellow-heroes; and we spend our last days in Hungary on the shores of Lake Balaton, the largest inland sea of Central Europe. Delightful talks we have here with our Hungarian friends, as we watch the green-blue colors changing on the smooth mirror of the lake, the lights on the opposite hills, the children playing on the sandy shores, the glowing, dusky sunsets, the gleaming moonlight.

And every now and then, as we talk and dream on the shores of this great lake, we hear the melting strains of a gipsy band. We listen to the ancient tunes, dreamy Rumanian airs or fiery "czardas" of the Hungarian, and wonder where the gipsies came from in the far-off days of the past,—this people who have no country and travel through the land. They were the minstrels of Eastern Europe, in earliest times, and the gipsy woman was always famous for her charms and witchcraft. Wherever we find them we see the same flashing eyes and lustrous white teeth, the same dash and brilliancy which lends such vivid color to the picture. And the familiar stories and traditions of their ancient past, and the legends of a nearer time, that make them seem a fitting part of the scene before us, float through our minds, while the wild music sounds again and again, like the "motive" air in an opera, as the grand blue river races ceaselessly on, and the beauty of the mountains stands out in the sunshine and storm.

THE NEXT PART IS ON PAGE 5760.

The Book of NATURE



WOLF CUBS BEING NURSED AT THE ZOO BY A FINE RETRIEVER DOG

THE LIFE OF YOUNG ANIMALS

WE are all pretenders—men, women, children, and animals. We dislike our work or our lessons only because they *are* work or lessons. The paid gardener often wearies of gardening because he is paid to do it as work, but with what joy those of us whose duty lies in other directions take up spade and fork and hoe, and do our share towards making the garden beautiful! Gardening is play to us, because we are not compelled to do it. How we love a game at tennis or croquet on a broiling summer's day, yet how badly we should feel ourselves treated if we *had*, as a matter of duty, to play tennis or croquet in hot weather! The things which we do for fun are just as hard as those which we have to do as duty, but because we may please ourselves as to whether we do them or not, we enjoy them.

It would seem that Nature knows this weakness in our character just as well as we ourselves know it, for she teaches the humbler members of her family to act as we act. The babyhood of many animals is much

CONTINUED FROM 5577



like our own. Baby animals have to be taught by their parents as we have, but their training is given as play. Let us turn back for a moment to page 5506, and read again the story of the man who was caught by a tigress. We see that the great creature does not then and



YOUNG WILD GOATS
One is feeding from a bottle

there eat him; she carries him to the jungle and calls her two babies to her, calms the fears which the sight of a man arouses, and does all she can to induce them to make a plaything of the unfortunate victim. It is a sort of kindergarten lesson for the baby tigers; they are taught a lesson in play. Now, *that* is the plan upon which many animals are taught when young. The very things which it will be necessary for them to do in after life in order to live, they learn from their parents in games. The wise parents are serious enough, no doubt, in their intentions; but the little ones cannot be serious, they take their lessons as if they were part of some game. They *are* only in real earnest when danger threatens, and they run to their parents for protection

Grave naturalists who have studied wild life in scenes far removed from the paths of men have asked themselves the question, "Are animals happy?" and have come to the conclusion that they cannot be. Fear of starvation and fear

of death by flesh-eating animals must, they think, be ever present in the minds of vegetable-feeding animals and make their lives miserable. We may comfort ourselves with the belief, however, that this unhappiness, even if it really exists in the adult animals,

does not affect the young ones. To them life must seem happy enough. They are taught to avoid dangers, but their lessons are taken in their play-time, and the art of concealing themselves cannot seem a much more serious matter to them than is a game of hide-and-seek to us. Nearly all animals are quite helpless when born. The fierce creatures which, when they grow up, destroy other animals, are as feeble as newly-hatched pigeons, and need as much attention as one of our own babies. As soon as the teeth of young lions or tigers begin to grow and they are able to bite, their parents bring them the bodies of animals upon which they begin their task of feeding themselves.

They are taught to "worry" the flesh; they gambol and play with it, and bite it in fun, as a puppy will bite the slippered toe stuck out by ourselves to tease him. They are encouraged to do things which sharpen their teeth and claws and make them bodily strong. Wolves and foxes are taught to hunt.

There are many stories of children having been carried off and brought up by wolves. Nobody can say whether these stories are true, but as so many such stories exist, men have tried to account for them, and they think that, if such a thing ever has happened, it has come about in this way. A mother or father wolf, seeing a baby child left un-

guarded, has snatched it up and carried it home to its little ones. The mother wolf has not been hungry at the time, and the little ones required only milk for their meal, which their mother supplied. The child has therefore dropped down

among the baby wolves, and, unconscious of its danger, has struggled to the side of the mother wolf and managed to get itself fed by her in the same way as the baby wolves. Then, food being plentiful in the neighborhood, there has been no need for the mother

or father wolf to eat the child. The latter has become the plaything of the baby wolves, who have come to look upon it as one of themselves, while the mother wolf grows used to regarding it in the same way. In that manner the child grows up as much like a wolf as a child can be. Lord Wolseley says that when he was in India he heard many stories of children being stolen and reared by wolves, and he believed it to be a fact that such a thing has happened. If so, he thought, then the legend of Romulus and Remus, the founders of Rome, having been nursed by a wolf may, after all, be true.

Italians do not doubt the story, and in

Rome a caged wolf is always kept in state to commemorate the event. The editor of this book was very much scared when, late one night, as he wandered through Rome, he stumbled by accident on the lair of the wolf kept by the Romans to-day in commemoration of the wolf which is said to have nurtured the founders of the Eternal City. The young of flesh-eating animals are taught, when at play, to practise the arts which may one day be necessary to enable them to grapple with

their prey. Notice the frolics of two kittens. They crouch, and creep, and spring upon one another, and ply teeth and claws in their happy sport. But picture those same kittens a few months



YOUNG TIGER CUBS PLAYING



MOTHER AND BABY KANGAROO

THE LIFE OF YOUNG ANIMALS

older; fancy the bites and scratches they now give as being given in earnest, and we see that here in play are the very movements which, in time to come, they will give in earnest, when some living animal has to be captured for food. The animals which do not eat others are taught when young to avoid other animals and the dangers which may spring from them.

Let us watch a mare and her foal in a field. The staid and sedate adult animal has no desire to go frisking about the pasture, but suddenly, with a low whinny to her baby, she will fling her head high, kick up her heels, and gallop away, rearing and plunging and swerving as she goes with her baby bounding like a thing of india-rubber after her. It is an old instinct which is driving the mother

to act in this way. She comes of a species which long ago was hunted by wild men and by wild animals.

In those days the life of a horse depended upon its power to gallop swiftly and to start aside from hidden danger. And that is what the mother is teaching the foal to do to-day as they both course so gaily and joyously over the meadow.

As we all know, the pace of a coach depends upon the speed of the slowest horse in the team. The same rule applies to the speed at which wild animals, moving in troops or herds, can travel. The animals which are full grown may be able to gallop like the wind, but the young ones cannot. Therefore, they must have some means of escaping animals who prey upon them, or their species would be exterminated. So the fawn is taught a really clever ruse. Should an enemy approach, the fawn darts off like a flash to a point seventy or eighty yards or more away, and there drops down, and lies close to the ground, with its long neck outstretched. The mother, seeing the young one hiding, then bursts away in the

opposite direction. She will even limp, pretending to be lame, so that the animal which is seeking food will follow her in the expectation of easily overtaking her.

But once she has lured the enemy well away from her little one, she bounds swiftly

beyond its reach, and then, all in good time, when the danger is past, she can return and find her fawn. The English hares are taught to do something of the same sort. At the least sign of danger they crouch flat upon the ground, and so much is their fur like the ground upon which they lie that an eye much better than that of a townsman is required to detect them. A young rabbit learns to sprawl flat when threatened, and the funny thing is that tame rabbits will do exactly the same thing, though their

color may be of no use for hiding them where they lie. It is easy for animals like these to crouch and hide, but it is a different matter for creatures like kangaroos and wallabies. The young of the kangaroo remind us of the young crayfish or the young lobster in the manner in which they flee to their mother for protection in the hour of danger. The mother lobster or mother crayfish, seeing danger coming, gives a warning shake with her claws, and the little ones scuttle under her body, and hide beneath

her, like clicks called by the alarm-cluck of their mother. The young kangaroo also has to depend upon the help of its mother for security. But the kangaroo mother is not content merely to hide her baby, as the lobsters and crayfish hide theirs. She receives her little one into her pouch, and then away she

bounds, carrying the little one with her. The baby kangaroo pops his perky little head over the edge of his soft and furry cradle, and smiles, secure from danger, if baby kangaroos do smile. Kangaroos are not the only young



JAPANESE APE AND BABY



MULE, WITH DWARF DONKEY AND HER BABY

animals which, when young, enjoy the privilege of being carried without having paid their fares. All the babies of the animals which we call marsupials enjoy the same good fortune. The marsupials are those animals which have this special pouch in which to carry their young about when they are growing up. But often enough the mother marsupial, if she be, say, a crab-eating opossum, must feel like the old lady who lived in a shoe, for she, too, has so many children that she cannot tell what to do to carry them all in the manner in which the mother kangaroo carries her family. Well, the opossum possesses something which the kangaroo has not. It has what, for the moment, we will venture to call a tree-climbing tail. The kangaroo has a tail of another kind, which acts as a prop when the animal sits up; and we have only to watch a couple of baby kangaroos at play to see another purpose which this tail can be made to serve.

While sitting up, they suddenly rise upon the thick part of the tail, and strike out in play at each other with their hind feet. It is well that it is in play. When they grow older they may have to use the same trick in real earnest, but then they will strike out with their powerfully armed hind claws, not at each other, but at man or dog, and tear either very seriously. And the little tricks which they play with their fore paws come in time to serve serious ends. A big kangaroo chased into water by dogs will calmly seize an enemy and hold it under the water until it is drowned. To such ends do the tricks of the baby kangaroos lead.

Now the tail of the opossum does not help it in this way. But it is like the tails of some of the monkeys—a sort of fifth hand or foot. As the opossum climbs a tree, this tail clings tightly round a branch and steadies the animal. The little opossums have little tails, and those who cannot ride in the mother's pouch, ride on her back, their tiny tails coiled tightly round hers. Thus they cling, as we ourselves cling by our hands to the straps in overcrowded cars and trains. The baby opossums are Nature's "strap-hangers."

Having mentioned the use which the New World monkeys make of their tails, we must remember how devotedly the mother monkey carries her baby about when it is not yet old enough to run quickly. Now and again she will support the little one with one arm, but she soon teaches it to cling tightly to the hair with which her body is covered, so that when she flees from peril she may have all four limbs at liberty. The baboon mothers and fathers encourage their little ones to play and become active, but when the little ones quarrel, as they often do, father baboon will step up, give the quarrelsome ones a good spank, and retire with all the satisfaction of a parent who has discharged a painful but necessary duty.

Some of the great apes—which are said to be not very cleanly in their habits—are a good deal cleaner than they are pictured, for they carry their babies down



FIVE EWES AND THEIR ELEVEN LAMBS

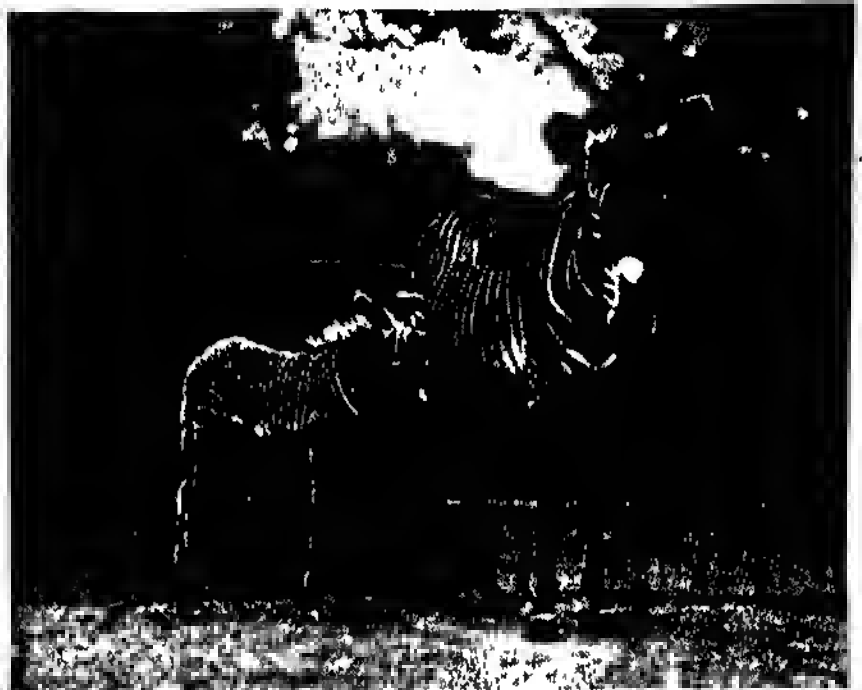
to stream or river, and teach them the blessed art of washing themselves. The little apes at first do not like it, but if they knew natural history as well as children know it, they might say: "You need not wonder that we do not like the water when even

little seals and other water animals do not." For that is the fact. The baby seals are very unwilling to enter the water at first, and their patient, affectionate mothers have to persuade them to take to the sea in which they are afterwards to make their home. Young otters, among the finest of all swimmers in this country, have to be taught to trust themselves in the river, just as the young swallows and the young eagles have to be taught to fly.

It is hardly correct to say that youthful beavers have to be taught to do their work, but, at any rate, we do know that they begin by very easy stages, and that not until the summer, during which they have been romping in the woods near the water, has nearly gone. They are then brought back from the woods to the river home, and while mother and father are hard at work, laying up a winter store of food, and making the home snug and safe for the cold days, the little ones play at



A CONGO MARSH BUCK AND YOUNG
The baby is four weeks old.



A MOTHER ZEBRA AND FOAL
The foal is one week old.

being busy, nibbling twigs, carrying them to and fro, making glorious mud-pies, and patting bits of them on to the dam, or the family home. They doubtless think it all fine fun, but their play is the real preparation for the work of their lives.

We have all seen lambs at play in the fields, but it is finest to see them on the hills, where they skip and leap about the rocks just like bouncing balls. Perhaps it does not occur to us that in this play, which their mother quietly watches, they are practising for the day when, in deadly struggle, they may have to contend with other sheep. Calves are never very playful, but they have to learn their lessons, whether they do it in fun or in earnest, for there are deadly weeds in our fields which they must avoid. A young tiger would quickly discharge from its throat any poisonous substance which it



YOUNG HIPPOPOTAMUSES 20 MONTHS OLD

might have swallowed ; but the calf has a series of four stomachs, and cannot so easily rid itself of poison, hence it has to be very careful, or its mother has to be very careful for it. Wild animals are less likely to be poisoned than domestic animals, but they have their dangers, and the little camel which we see in the picture, though it is very young, would, if left out in the wilds, probably manage to steer clear of poisonous weeds. That would depend, however, upon whether it were in the place to which its parents belonged in their free state. For we know that camels taken to a strange part of Africa died in great numbers, from eating weeds which the native camels all avoided. The chief concern of the young rhinoceros is to avoid being drowned in the water to which its parents take it to drink, or from being smothered



A BACTRIAN CAMEL AND ITS BABY
The young camel is five weeks old.



A YOUNG ELEPHANT LEARNING TO BEG
The elephant is two years old.

in the mud in which they love to roll. It must learn also to lead the way by safe paths to and from the home in the reeds or in the depths of the jungle when feeding and drinking and bathing are over—for in many instances it is the baby rhinoceros which heads the march on these trips. One other thing it must learn, too—to tell by the power of its nose what animals or men are in the neighborhood. And it does it; it can tell when a man is hundreds of yards away—not by sound, but simply by smelling him. The young hippopotamus has to go through much the same sort of training, but he has to be much more expert in the water, for is he not the young "river horse"? Both he and the rhinoceros display the warmest affection for the mother, and if the latter be killed, the little one will not leave her, but remains to mourn until it is either shot or dragged away from the spot by ropes.

The most interesting of all the big babies is the baby elephant, which is as affectionate as a baby hippopotamus, but more clever. If men catch a young elephant, they can train it to do things which seem almost human; but the mother elephant is perhaps an even better trainer of her baby. Take the case of a baby elephant which had sustained a bad injury to its head. It was like a cross child with a sore finger; could not bear to be touched, and ran away in fury if anybody tried to cure it. This could not go on, for the wound was a bad one, and the young elephant's life was in danger, so the keeper talked to the baby elephant's mother, and this clever creature understood what he wanted.

She quietly seized her baby with her

trunk, and forced it down upon its knees, holding it there while a doctor cleaned and dressed the wound; and this was repeated every day until the little one was quite cured. Baby giraffes and zebras are not educated in this way. They are taught to avoid man just as they are taught to avoid the lion, the hyena, and the jackal. But, if they do happen to be

caught, they are treated with great kindness, and live happily in our zoo or in similar gardens elsewhere. There are no lions or hyenas to kill them there. They

are much too well looked after for that. The keepers in the zoological gardens, who look so very stern and solemn, and who sometimes frighten tender-hearted children by telling them not to give pea-nuts to tigers and chocolate cake to the seals, are on certain occasions—when no one is looking—as gentle as women to their charges. You ought to see them when a baby is born in a zoo—not a little pink, fat, ten-toed, fluffy-headed human baby, but a baby with claws and whiskers, or a baby with a trunk of a nose, or a baby with hairy body and a great, long, hairy tail. A new baby in a zoo turns all the stern-faced keepers into beaming nurses. The creases come out of their faces, the frown disappears from their brows, their cheeks expand, their lips smile, their eyes melt with pleasure, they need only cap and apron and a sewing-box to look exactly like your own nurse. The angel in a zoo is the last-born baby. It turns the place into

heaven. The keepers cluck to it, cuddle it, play with it, feed it, and try to comfort it when it is cutting its teeth.

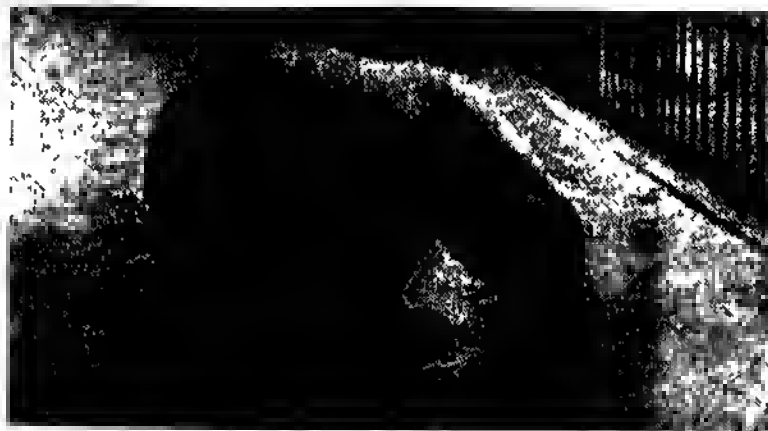
THE NEXT STORY OF NATURE IS ON PAGE 5745.



A PENGUIN AND BABY IN THEIR NEST
The baby is ten days old.



A GIRAFFE AND HER BABY
The baby is ten months old.



A YOUNG POLAR BEAR AT THE ZOO
The bear is four months old.

The Book of SCHOOL LESSONS



READING

MEANING OF COMMON ABBREVIATIONS

IN our reading we often see contractions, or initial letters, which we know stand for something. We may not know what they stand for,

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and, consequently, miss their meaning. On this and the following pages are given the contractions that we frequently meet with in our reading.

A

A1. The principal use of this expression is for ships. At Lloyd's a ship that is classed as A1 is a ship that is almost new or is as good as new. The A refers to the quality of the hull, and the 1 to the anchors, cables, and stores. The expression has now come to be used for anything that is very good. If we say that we feel A1, we mean that we feel in the very best of health.

A.B. Able-bodied seaman—a sailor who is no longer an apprentice, and is not an officer.

A.B. Bachelor of Arts.

A.D. In the Year of Our Lord. Taken from the Latin words *Anno Domini*. Our system of numbering the years is the Anno Domini system, and 1910 A.D. means the year 1910, reckoning the year of Christ's birth as 1.

Ad. or Advt. Advertisement.

A.D.C. Aide-de-camp, an army officer who carries orders to and from a general on the field of battle.

Æ. or æt. Aged, from the Latin word *ætatis*, meaning of the age. Charles Jones, æt. ten years, means Charles Jones, ten years of age.

A.H. The Mohammedans reckon their years from the

Hegira, or the flight of Mohammed from Mecca to Medina, in 622 A.D. The letters stand for *Anno Hegiræ*. Latin word *anno*, meaning "in the year," and the Arabic word for "flight." When the Mohammedans speak of the year 1287 A.H., they mean the same year as we do when we speak of 1909 A.D.

Ala. Alabama, one of the states of U.S.A.

Ald. Alderman.

A.M. Before noon. The letters represent the Latin words *ante meridiem*.

A.M. In the year of the world. The letters represent the Latin words *anno mundi*. The Jews reckon the years from the time the world was supposed to have been created, which was 3760 B.C. The Jewish year 5669 A.M. is the same as 1909 A.D., but the Jewish year begins on September 26 instead of on the following January 1.

A.M. Master of Arts, from the Latin words *artium magister*. See M.A.

Anon. Anonymous.

A.O.F. Ancient Order of Foresters.

App. Appendix.

A.R.A. Associate of the Royal Academy (London).

Ariz. Arizona, one of the states of U.S.A.

Ark. Arkansas, one of the states of U.S.A.

A.R.S.A. Associate of the Royal Scottish Academy or Associate of the Royal Society of Arts.

A.R.S.L. Associate of the Royal Society of Literature.

A.T.S. American Tract Society.

A.U.C. The letters stand for the Latin words *ab urbe condita*, from the building of the city—that is, Rome.

A.V. Authorized version of the Bible.

B

B.A. Bachelor of Arts. The letters stand for the Latin words *Baccalaureus Artium*.

B.C. Before Christ. The years before Christ are reckoned backwards, so that the year 1 B.C. was one year before the birth of Christ, and the year 200 B.C. was 200 years before the birth of Christ.

B.C.L. Bachelor of Civil Law.

B.D. Bachelor of Divinity.

B.L. Bachelor of Law.

b.l. Bill of lading.

B.M. Bachelor of Medicine. The letters are also used to mean British Museum.

B. Mus. Bachelor of Music.

B.Sc. Bachelor of Science. The letters stand for the Latin words *Scientiæ Baccalaureus*.

Bt. or Bart. Baronet.

bu. Bushel.
bx. box.

C

C. The Roman numeral for 100, from the Latin *centum*, a hundred.
C. Centigrade. The markings on the French or decimal thermometer. It is so called from the Latin *centum*, a hundred, and *gradus*, a step, because from freezing to boiling point is divided into 100 degrees. The American system of thermometer marking is the Fahrenheit, which is usually written F. or Fahr. It is so called after Fahrenheit, the scientist who invented it.
C. Centime. A French coin, five of which are about equal to one cent.
c. About. Latin *circa*.
Cal. California, one of the states of U.S.A.
Cap. Chapter, from the Latin *caput*, the head.
C.B. Companion of the Order of the Bath.
C.B. Confined to barracks.
C.B. Cape Breton, a part of Nova Scotia in Canada.
C.C.N.Y. College of the City of New York.
C.D.S.O. Companion of the Distinguished Service Order.
c.d.v. Carte-de-visite.
C.E. Civil Engineer, Christian Endeavor, or Children's Encyclopædia.
Cf. A contraction of "confer" and used in the sense of *compare*. In bookbinding cf. means calf.
C.F.I. A commercial expression meaning cost, freight, and insurance.
C.G. Captain-general, commissary-general, consul-general, coastguard, or captain of the guard.
Ch. Chapter. In music, choir-organ.
Chic. Chicago.
C.J. Chief Justice.
C.I.E. Companion of the Order of the Indian Empire.
C.M. Master of Surgery. The letters stand for the Latin words *Chirurgia Magister*.
Cm. Centimetre, the French measurement.
C.M.G. Companion of the Order of St. Michael and St. George.
C.O. Commanding Officer.
C/o. Care of.
c.o.d. Cash on delivery.
Colo. Colorado, one of the states of U.S.A.
Conn. Connecticut, one of the states of U.S.A.

C.O.S. Charity Organisation Society.
C.P. Court of Probate.
Cr. Credit or creditor.
C.S. Chemical Society.
C.S. Civil Service.
C.S.A. Confederate States of America.
C.S.N. Confederate States Navy.
C., or ct. Cent.
C.V.O. Commander of the Royal Victorian Order.
C.W.O. Cash with order.
cwt. Hundredweight, from c. for *centum*, a hundred, and wt. for weight.

D

d. Penny or pence. 2d. means two pence, and 1d. means one penny. The d. is for the Latin word *denarius*.
D.C. Repeat from the beginning. A contraction used in music, and standing for the Italian words *Da capo*. Also district of Columbia, in which is Washington, the capital of U.S.A.
D.C.L. Doctor of Civil Law.
D.D. Doctor of Divinity. The letters stand for the Latin words *Divinitatis Doctor*.
Del. Delaware, one of the states of U.S.A.
D.G. By the grace of God. The letters stand for the Latin words *Dei gratia*.
D.L. Deputy Lieutenant.
D.Lit. Doctor of Literature.
Do. Ditto, the same.
Dr. Doctor or debtor.
dr. Dram.
D.Sc. Doctor of Science. The letters stand for the Latin words *Doctor Scientia*.
D.S.O. Distinguished Service Order.
D.V. The letters stand for the two Latin words *Deo Volente*, meaning God willing.
dwt. Pennyweight. d. stands for the Latin word *denarius*, and wt. is a contraction for weight.

E

E. East.
E. & O.E. Errors and omissions excepted.
E.C. East Central, a London postal district.
Ed. Editor, or sometimes edition.
e.g. For example. The letters stand for two Latin words *exempli gratia*.
E.N.E. East-north-east—the point of the compass midway between the east and the north-east.
Eng. Engineer; Engineering; England; English.

E.R.I. Edward, King and Emperor, standing for the Latin words *Eduardus, Rex et Imperator*.
E.S.E. East-south-east, the point of the compass midway between east and south-east.
etc. Etcetera, meaning and others.
et seq. And the following.

F

F. or Fahr. The measurements of the Fahrenheit thermometer.
f. Farthing, florin, franc, foot, or fathom.
F. and A.M. Free and Accepted Masons.
F.B.S. Fellow of the Botanical Society.
fcp. Foolscap, a size of paper.
F.C.S. Fellow of the Chemical Society.
F.D. or Fid. Def. Defender of the Faith, from the Latin words *Fidei defensor*.
F.G.S. Fellow of the Geological Society.
fl. From the Latin word *floruit* meaning flourished.
Fla. Florida, one of the states of U.S.A.
F.L.S. Fellow of the Linnean Society.
F.-M. Field-marshal.
fm. Fathom.
F.O. In music, full organ.
F.P. Fire plug, frequently seen on walls, indicating that there is a fire plug near that spot.
fr. Franc, the French coin.
F.R.A.S. Fellow of the Royal Astronomical Society or Fellow of the Royal Asiatic Society.
F.R.C.P. Fellow of the Royal College of Physicians.
F.R.C.S. Fellow of the Royal College of Surgeons.
F.R.G.S. Fellow of the Royal Geographical Society.
F.R.H.S. Fellow of the Royal Horticultural Society.
F.R.I.B.A. Fellow of the Royal Institute of British Architects.
F.R. Met. S. Fellow of the Royal Meteorological Society.
F.R.S. Fellow of the Royal Society.
F.R.S.L. Fellow of the Royal Society of Literature.
F.S.A. Fellow of the Society of Arts or Fellow of the Society of Antiquaries.
F.S.S. Fellow of the Statistical Society.
ft. Foot, feet, or fort.
F.Z.S. Fellow of the Zoological Society.

G

G. or gm. Gramme, the French weight.
Ga. Georgia, one of the states of U.S.A.
G.B. Great Britain.
G.C.B. Knight Grand Cross of the Order of the Bath.
G.C.H. Knight Grand Cross of Hanover.
G.C.I.E. Knight Grand Commander of the Order of the Indian Empire.
G.C.L.H. Grand Cross of the Legion of Honor.
g.c.m. Greatest common measure.
G.C.M.G. Knight Grand Cross of the Order of St. Michael and St. George.
G.C.S.I. Knight Grand Commander of the Order of the Star of India.
G.C.V.O. Knight Grand Cross of the Royal Victorian Order.
G.F.S. Girls' Friendly Society.
gm. Gramme.
G.M. Grand Master of Masons.
G.O. A term in music meaning great organ.
G.P.O. General Post Office.
gr. Grain.
gs. Guineas.
gu. Guinea.

H

H.B.M. His or Her Britannic Majesty.
H.C.M. His or Her Catholic Majesty.
H.E. His Eminence; His Excellency.
H.H. His or Her Highness.
H.I.H. His or Her Imperial Highness.
H.M. His or Her Majesty.
H.M.C. His or Her Majesty's Customs.
H.M.I.S. His or Her Majesty's Inspector of Schools.
H.M.S. His or Her Majesty's Ship. His or Her Majesty's Service.
H.P. Half pay.
h.p. Horse power.
H.R. H'se of Representatives.
H.R.E. Holy Roman Emperor or Holy Roman Empire.
H.R.H. His or Her Royal Highness.
H.R.I.P. Here rests in peace. The letters stand for the Latin words *Hic requiescat in pace*.
H.S.H. His or Her Serene Highness.
H.S.S. Fellow of the Historical Society. The letters stand for the Latin words *Historiae Societatis Socius*.

I

I. Idaho, one of the states of U.S.A.
Ia. Iowa, one of the states of U.S.A.
Ib. or Ibid. In the same place, standing for the Latin word *Ibidem*.
I.C.E. Institute of Civil Engineers.
I.C.S. Indian Civil Service.
Ida. Idaho, one of the states of U.S.A.
I.D.B. Illicit diamond buying.
i.e. That is. The letters stand for the Latin words *id est*.
I.H.S. Jesus, from the first three letters of the name when written in Greek capitals. It is sometimes erroneously supposed to stand for *Jesus Hominum Salvator*, three Latin words meaning Jesus, Saviour of men.
Ill. or Ills. Illinois, one of the states of U.S.A.
I.M.S. Indian Medical Service.
in. Inch or inches.
Incog. From the Italian *incognito*, meaning unknown.
I.N.D. In the Name of God, standing for the Latin words *In Nomine Dei*.
Ind. Indiana, one of the states of U.S.A.
Ind. T. Indian Territory, a former district in U.S.A.
Inf. From the Latin *infra*, meaning below.
I.N.R.I. Jesus of Nazareth, King of the Jews. The letters stand for the Latin words *Iesus Nazarenus Rex Judaeorum*, which were written above the Cross. J and I are the same letters in Latin.
Inst. From the Latin *instante*, meaning current.
Io. Iowa, one of the states of U.S.A.
I.O.F. Independent Order of Foresters.
I.O.G.T. Independent Order of Good Templars.
I.O.U. I owe you.
I.R. Internal Revenue.

J

J.H.S. The same as I.H.S.
J.P. Justice of the Peace.
Jr. or Jun. Junior.
J.U.D. Doctor of Canon and of Civil Law. The letters stand for the Latin words *Juris Utriusque Doctor*.

K

Kan., Kans. Kansas, one of the states of U.S.A.
K.B. Knight of the Bath or King's Bench.
K.C. King's Counsel.

K.C.B. Knight Commander of the Order of the Bath.
K.C.I.E. Knight Commander of the Order of the Indian Empire.
K.C.M.G. Knight Commander of the Order of St. Michael and St. George.
K.C.S.I. Knight Commander of the Order of the Star of India.
K.C.V.O. Knight Commander of the Victorian Order.
Ken. or Ky. Kentucky, one of the states of U.S.A.
Kg. Kilogramme, the French weight.
K.G. Knight of the Garter.
K.G.C. Knight of the Grand Cross.
K.G.C.B. Knight of the Grand Cross of the Bath.
K.G.F. Knight of the Golden Fleece.
K.H. Knight of the Order of Hanover.
K.L.H. Knight of the Legion of Honor.
Km. Kilometre, the French measure, equal to $\frac{5}{8}$ mile.
Knt. or Kt. Knight.
K.P. Knight of the Order of St. Patrick. Knight of Pythias.
K.S.I. Knight of the Order of the Star of India.
K.T. Knight of the Order of the Thistle. Knight Templar.
Kt. Bach. Knight Bachelor.
Ky. Kentucky, one of the states of U.S.A.

L

L. Lake, Book, Latin *liber*.
l. Latitude.
lb. Pound or pounds, from the Latin word *libra*, meaning a pound.
l.b.w. Leg before wicket.
l.c. Lower-case.
L.C.B. Lord Chief-baron.
l.c.m. Least common multiple.
£E. Egyptian pound, which is equal to about \$5.00.
L.H. In music means played with the left hand.
L.I. Light Infantry.
Lieut. Lieutenant.
lim. or Ltd. Limited.
LL.B. Bachelor of Laws. The letters stand for the Latin words *Legum Baccalaureus*.
LL.D. Doctor of Laws. The letters stand for the Latin words *Legum Doctor*.
Lou. Louisiana, one of the states of U.S.A.
L.R.C.P. Licentiate of the Royal College of Physicians.
L.R.C.S. Licentiate of the Royal College of Surgeons.
L.S. Linnæan Society.
L.S.A. Licentiate of the Society of Apothecaries.

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L.s.d. Pounds, shillings, and pence, from the Latin *librae, solidi, denarii*.

Lt. or Lieut. Lieutenant.

£T. Turkish pound = \$4.50.

M

M. 1,000, from the Latin *mille*, a thousand.

M. or Mons. Short for Monsieur, the French word for Mr.

M.A. Master of Arts.

Mass. Massachusetts, one of the states of U.S.A.

M.B. Bachelor of Medicine. The letters stand for the Latin words *Medicinæ Baccalaureus*.

M.C. Member of Congress.

Md. Maryland, one of the states of U.S.A.

M.D. Doctor of Medicine. The letters stand for the Latin words *Medicinæ Doctor*.

Mdle. or Mlle. The French for Miss, being a contraction of *Mademoiselle*.

Mdm. or Mme. Madam.

Me. Maine.

M.E. Mining Engineer. Methodist Episcopal.

M.F.H. Master of Fox Hounds.

mg. milligramme.

M.I.C.E. or M.Inst.C.E. Member of the Institute of Civil Engineers.

Mich. Michigan, one of the states of U.S.A.

Minn. Minnesota, one of the states of U.S.A.

Mis. Missouri, one of the states of U.S.A.

Miss. Mississippi, one of the states of U.S.A.

Mlle. See Mdle.

MM. Short for Messieurs, the plural of Monsieur.

M.M. Their Majesties.

Mo. Missouri, one of the states of U.S.A.

Mont. Montana, one of the states of U.S.A.

M.P. Member of Parliament.

M.P.S. Member of the Philological or of the Pharmaceutical Society.

Mr. Master or Mister.

M.R.A.S. Member of the Royal Academy of Sciences or of the Royal Asiatic Society.

M.R.C.C. Member of the Royal College of Chemistry.

M.R.C.S. Member of the Royal College of Surgeons.

M.R.C.V.S. Member of the Royal College of Veterinary Surgeons.

M.R.G.S. Member of the Royal Geographical Society.

M.R.I. Member of the Royal Institution.

M.R.I.A. Member of the Royal Irish Academy.

Mrs. Mistress.

MS. Manuscript. The plural is MSS.

M.S. Master of Science.

m.s.l. Mean sea-level.

M.S.S. Member of the Statistical Society.

Mus.B. Bachelor of Music.

Mus.D. Doctor of Music.

N

N. North.

N.A. North America; also National Academy.

N.B. Note well. The letters stand for the Latin words *Nota bene*. Also refers to North Britain, or Scotland, and to New Brunswick.

N.C. North Carolina, one of the states of U.S.A.

N.C.O. Non - Commissioned Officer.

N. Dak. North Dakota, one of the states of U.S.A.

N.E. North-east or New England.

Neb. or Nebr. Nebraska, one of the states of U.S.A.

nem-con. From two Latin words *nemine contradicente*, unanimously.

Nev. Nevada, one of the states of U.S.A.

N.F. Newfoundland.

N.H. New Hampshire, one of the states of U.S.A.

N.J. New Jersey, one of the states of U.S.A.

N.N.E. North-north-east, the point in the compass midway between north and north-east.

N.N.W. North-north-west, the point in the compass midway between north and north-west.

No. Number. It is short for the Latin word *Numero*.

n.o.p. Not otherwise provided.

N.P. Notary public.

N.S. New style. See O.S.

N.S. Nova Scotia.

N.S.P.C.C. National Society for the Prevention of Cruelty to Children.

N.W. North-west.

N.W.T. North West Territories, in Canada.

N.Y. New York, one of the states of U.S.A.

O

O. Ohio, one of the states of U.S.A.

Ob. Died, standing for the Latin *Obiit*.

O.E. Old English.

O.F. Odd Fellow.

O.K. All correct, the origin of this is obscure. By some it is said to refer to "Old Keokuk," an Indian Chief,

who signed treaties with the initials O.K.

Ont. Ontario, a province of Canada.

%. Per cent.

Ore. or Oreg. Oregon, one of the states of U.S.A.

O.S. Old style, referring to the Calendar before its change in Queen Anne's reign.

oz. Ounce. The z represents a curious character that was used in old manuscripts to denote an abbreviation.

P

p. Page; the plural form is pp.

Pa. Pennsylvania, one of the states of U.S.A.

P.C. Privy Councillor, police constable, or postcard.

P.E.I. Prince Edward Island.

Penn. Pennsylvania, one of the states of U.S.A.

Ph.B. Bachelor of Philosophy. The letters stand for the Latin words *Philosophiæ Baccalaureus*.

Ph.D. Doctor of Philosophy. The letters stand for the Latin words *Philosophiæ Doctor*.

P.M. Afternoon, standing for the Latin words *post meridiem*; postmaster or postmaster. The letters also stand for *post mortem*, the examination of a dead body.

P.M.G. Postmaster-general.

P.O. Post office, patent office, or postal order.

P.O.D. Paid on delivery.

P.O.O. Post office order.

P.P. Parish Priest.

pp. Pages.

P.P.C. To take leave. The letters stand for the French words *pour prendre congé*.

P.P.S. Additional postscript, see P.S.

P.R.A. President of the Royal Academy.

Pro tem. From two Latin words *pro tempore*, meaning for the time.

prox. From the Latin *proximo*, meaning next.

P.S. Pharmaceutical Society or Philological Society.

P.S. Postscript—a part of a letter written after or below the signature of the writer, from the Latin *post scriptum*.

pt. Part, or pint.

P.T.O. Please turn over.

Q

Q.E. Which is. The letters stand for the Latin words *quod est*.

Q.E.D. Which was to be demonstrated. The letters stand for the Latin words *quod erat demonstrandum*.

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Q.E.F. Which was to be done, standing for the Latin words *Quod erat faciendum*.

Q.M. Quartermaster.

Q.M.G. Quartermaster-general.

q.s. As much as will suffice. The letters stand for the Latin *quantum sufficit*.

q.v. Which see. The letters stand for the Latin words *quod vide*.

R

R. King or queen, from the Latin *Rex* or *Regina*.

R. Take, used in doctor's prescriptions, and standing for the Latin word *recipe*.

R.A. Royal Academy or Royal Artillery.

R.A.M. Royal Academy of Music.

R.A.S. Royal Asiatic Society.

R.C. Roman Catholic.

R.C.M. Royal College of Music.

R.C.S. Royal College of Surgeons.

R.E. Royal Engineers.

Rev. Reverend; also revise.

R.F. French Republic; for the French words *République Française*.

R.G.S. Royal Geographical Society.

R.H. In music, Right hand.

R.H.A. Royal Horse Artillery.

R.H.G. Royal Horse Guards.

R.H.S. Royal Humane Society, Royal Historical Society, or Royal Horticultural Society.

R.I. Rhode Island, one of the states of U.S.A.

R.I.B.A. Royal Institute of British Architects.

R.I.P. Rest in peace. The letters stand for the Latin words *Requiescat in pace*.

R.M. Royal Mail or Royal Marines.

R.M.A. Royal Marine Artillery.

R.M.L.I. Royal Marine Light Infantry.

R.M.S. Railway Mail Service.

R.N. Royal Navy.

R.P.O. Railway Post Office.

R.R. Railroad.

R.S. Royal Society.

R.S.A. Royal Society of Antiquaries.

R.S.L. Royal Society of Literature.

R.S.M. Royal School of Mines.

R.S.O. Railway sub-office, a postal term.

R.S.P.C.A. Royal Society for the Prevention of Cruelty to Animals.

R.S.S. Fellow of the Royal Society. The letters stand for the Latin words *Regis*

Societatis Socius. The letters S.R.S. are also used.

R.S.V.P. Reply, if you please. The letters stand for the French words *Répondez, s'il vous plait*.

R.V. Rifle Volunteers or Revised Version (of the Bible).

S

S. Shillings. SS., Saints.

S.A. South Africa.

S.A.S. Fellow of the Society of Antiquaries. The letters stand for the Latin words *Societatis Antiquariorum Socius*.

S.C. South Carolina, one of the states of U.S.A.

Sc.B. Bachelor of Science. The letters stand for the Latin words *Scientiæ Baccalaureus*.

Sc.D. Doctor of Science. The letters stand for the words *Scientiæ Doctor*.

s.d. Without day; indefinitely; a contraction for *sine die*, Latin.

S. Dak. South Dakota, one of the states of U.S.A.

S.E. South-east.

s.g. Specific gravity.

S.J. Society of Jesus.

S.M. The French form of his or her Majesty, standing for the French words *Sa majesté*.

S.P.C.C. Society for the Prevention of Cruelty to Children.

S.P.G. Society for the Propagation of the Gospel.

S.P.Q.R. The Senate and People of Rome. The letters stand for the Latin words *Senatus Populusque Romanus*.

sq. From the Latin word *sequens*, meaning the following.

Sr. Senior.

SS. Steamship.

S.S.E. South-south-east—the point of the compass midway between south and south-east.

S.S.U. Sunday School Union.

S.S.W. South-south-west, the point of the compass midway between south and south-west.

St. Street, saint, or strait.

S.T.B. Bachelor of Sacred Theology.

Sup. From Latin *supra*, meaning above.

S.W. South-west or senior warden.

T

Tenn. Tennessee, one of the states of U.S.A.

Tex. Texas, one of the states of U.S.A.

T.S. Twin screw.

U

U.F.C. United Free Church of Scotland.

U.K. United Kingdom.

U.P. United Presbyterian.

U.S. United States, or United Service, i.e., the Army and Navy.

U.S.A. United States of America. United States Army.

U.S.M. United States Mail, or Marines.

U.S.N. United States Navy.

V

V. Roman numeral for 5.

v. Against, standing for the Latin word *versus*; or see, standing for the Latin word *vide*.

Va. Virginia, one of the states of U.S.A.

V.C. Victoria Cross, vice-chancellor, or vice-consul.

Verm. or Vt. Vermont, one of the states of U.S.A.

v.g. For example, standing for the Latin words *verbi gratia*.

V.P. Vice-president.

V.R. Queen Victoria, standing for the Latin words *Victoria Regina*.

V.R.I. Victoria, Queen and Empress, standing for the Latin words *Victoria Regina et Imperatrix*.

V.S. Veterinary Surgeon.

Vt. or Verm. Vermont, one of the states of U.S.A.

W

W. West.

Wash. Washington, one of the states of U.S.A.

W.C. West Central, a postal district in London, England.

W.C.T.U. Women's Christian Temperance Union.

Wis. or Wisc. Wisconsin, one of the states of U.S.A.

W.N.W. West-north-west, the point in the compass midway between west and north-west.

W.S.W. West-south-west, the point in the compass midway between west and south-west.

wt. Weight.

W. Va. West Virginia, one of the states of U.S.A.

Wyo. Wyoming, one of the states of U.S.A.

Y

yd. Yard.

Y.M.C.A. Young Men's Christian Association.

Y.W.C.A. Young Women's Christian Association.

THE NEXT SCHOOL LESSONS BEGIN ON PAGE 5865

THE COUNTRY HOME OF JOHN MILTON.



Milton's cottage at Chalfont St. Giles, where the poet went to escape the great plague.



Milton's first love—From the painting by G. H. Boughton, R.A.



John Milton as a boy, a youth, and a man.

JOHN MILTON AND HIS POEMS

JOHN MILTON, whom good judges of books place next to Shakespeare among English poets, trained himself from boyhood to be a poet. Early in life he dreamed of writing something the world "would not willingly let die."

From a child he was an eager reader, a writer, and a rhymers. The hymn

Let us with a gladsome mind
Praise the Lord, for He is kind,

a paraphrase of the 136th Psalm, was written by Milton when he was fifteen, and before he was twenty he had produced much Latin verse, and was known at the University as a scholar and poet.

Milton's birth was nearly eight years before Shakespeare's death. He was born on December 9, 1608, at the Spread Eagle, Bread Street, off Cheapside, London, the very street in which stood the Mermaid Tavern, where Shakespeare met the friends who wrote plays with him.

Possibly before he was eight years old the studious boy, John Milton, may have seen Shakespeare pass down Bread Street to the Mermaid, on a visit from his country home.

In those days it was the custom for a man engaged in business to hang outside his door a sign by which his place of business could be easily recognized, and following this custom,

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Milton's father used the sign of the Spread Eagle. The older John Milton was a scrivener, that is to say he drew wills, prepared other documents, and in fact did much of the work that in our day is done by lawyers. He was a well-educated man of good family, who had prospered in his business, and was highly respected. He was an excellent musician, loved art and literature, and both he and his wife were deeply religious. Probably in all England there could not have been found a more delightful home than the one in which the future poet spent his boyhood. He had several brothers and sisters, but only two lived to grow up, a sister, Ann, who was several years older than he, and a brother, Christopher, who was several years younger, and who afterward became a lawyer.

John Milton's parents were proud of their handsome, gifted son, and had his portrait painted when he was ten years old. At this age too his education had been well begun. He had already been sent to a school in Essex, and now had a tutor at home. Two years later he went to St. Paul's school, which was noted for its teaching of Greek and Latin. At the age of sixteen he was ready for College. He chose Christ's College at Cambridge University, the same college which the

poet Spenser had attended, and there he spent seven years of deep study.

The handsome young Puritan, described by one who knew him as "a harmonical and ingenious soul in a beautiful and well-proportioned body," determined to be a pure-minded, good man, and to write great poems for distant generations. Noble poems, he felt, should be *lived* by the man who wrote them. The real beginning of Milton's poetry is a beautiful story. It was Christmas Eve in 1629, when he had just turned twenty-one. The starry night mingled in his heart wistful thoughts of his own God-given poetic gifts, and devotion to the Saviour who on that night long ago "Our great redemption from above did bring," and these thoughts shaped themselves into an "Ode on the Morning of Christ's Nativity." The poet begins the consecration of his pen by asking :

Say, Heavenly Muse, shall not thy sacred
vein

Afford a present to the Infant God ?

Hast thou no verse, no hymn, no solemn
strain

To welcome Him to this His new abode,

Now while the heaven, by the sun's team
untrod,

Hath took no print of the approaching light,

And all the spangled hosts keep watch in
squadrons bright ?

See, how from far, upon the Eastern road,

The star-led wizards haste with odours
sweet :

O, run, prevent them with thy humble ode,

And lay it lowly at His blessed feet ;

Have thou the honour first thy Lord to
greet,

And join thy voice unto the angel-choir,

From out His secret altar touched with hal-
lowed fire.

Then follows a hymn telling of the coming of the Babe to Bethlehem and the retreat of the false gods.

In 1632 he left Cambridge with the degree of M.A., and went to his father's country house at Horton, in Buckinghamshire, where five more years of his life rolled on in the study of books and Nature and the writing of poems which rank among the finest in the world.

Of the poems written during these years of training, "Arcades," a masque set to music by Lawes, one of the king's musicians, was a slight work suited to the open-air performances then fashionable. "Comus," another masque, performed at Ludlow Castle, and interspersed with

songs, for which Lawes again made the music, is a beautiful poem showing how virtue may pass unscathed through temptation, a truth illustrated by Milton's own life. This is his testimony: "I take God to witness that I lived untouched from all profligacy and vice, having perpetually before me the thought that I could not escape the eyes of God."

"Comus" tells how a lady, pure of heart, is lost by night in a wood, and is met by an evil-minded magician disguised as a shepherd, who uses all his power to deceive her, but

No evil thing that walks by night,
In fog or fire, by lake or moonish fen,
Blue meagre hag, or stubborn unlaid ghost
That breaks his magic chains at curfew time,
No goblin, or swart fairy of the mine,
Hath hurtful power o'er true virginity.
So dear to Heaven is saintly Chastity,
That, when a soul is found sincerely so,
A thousand liveried angels lackey her,
Driving far off each thing of sin and guilt.

One of Milton's early poems, "L'Allegro," is descriptive of a man whose mind is inclined to thoughtful mirth; and another, "Il Penseroso," tells how a morning may pass when one is in a pensive mood. In each Milton is the man, and his mind is full of poetical thoughts, drawn from his reading of ancient and modern poetry and his observation of Nature.

A form of Milton's lovely gift of song was his way of using the sound and sway of words for the brighter or darker coloring of the thought he was expressing. Thus "L'Allegro" trips to its own gaiety; "Il Penseroso" has a statelier measure; and the third of Milton's earlier poems, "Lycidas," a lament for the death of a college friend who was drowned in crossing to Ireland, has a mournful sweetness that for ever haunts the reader. It was customary at Cambridge to write a poem on the death of a scholar-friend, and Edward King, the friend to whom Milton gives the poetic name of Lycidas, was himself a poet. Milton had written several elegies, but never before with the feeling shown in these lines that echo and re-echo beauty of tone.

Yet once more, O ye laurels, and once more
Ye myrtles brown, with ivy never sere,
I come to pluck your berries harsh and crude,
And with forced fingers rude
Shatter your leaves before the mellowing
year.

TWO SCENES IN THE LIFE OF JOHN MILTON



Milton was the great thinker in the days of the Commonwealth, when Oliver Cromwell ruled England with a firm hand. Both men did imperishable service to their native land. The poet in those days could not have lived by his poetry, and he was employed to conduct the official correspondence of the country with foreign Powers in the Latin language, then used for that purpose. While so employed he lost his eyesight, and had to have a colleague in his work. This colleague was a fine poet and a man of upright character, Andrew Marvell by name. In this picture, by G. H. Boughton, R.A., we see Marvell shaking hands with the blind poet.



As Milton was blind during the last twenty years of his life, and in those years composed some of his greatest poems, including "Paradise Lost" and "Samson Agonistes," his daughters had to be his eyes and write down the words as he dictated them. In this picture by Munkacsy we see his daughters thus engaged, and perhaps unwillingly. For they grew tired of the laboring work which their father's blindness required of them, and in the later years of his life they behaved in an undutiful way, much to the sorrow of the great poet.

Bitter constraint, and sad occasion dear
Compels me to disturb your season due ;
For Lycidas is dead, dead ere his prime,
Young Lycidas, and hath not left his peer.
Who would not sing for Lycidas ? He knew
Himself to sing, and build the lofty rhyme.
He must not float upon his watery bier
Unwept, and welter to the parching wind
Without the meed of some melodious tear.

For we were nursed upon the self-same
hill,
Fed the same flock, by fountain, shade, and
rill,

Together both, ere the high lawns appeared
Under the opening eyelids of the morn,
We drove afield, and both together heard
What time the gray-fly winds her sultry horn,
Battening our flocks with the fresh dews of
night,

Oft till the star that rose at evening bright
Towards heaven's descent had sloped his
westering wheel.

But oh ! the heavy change now thou art gone,
Now thou art gone, and never must return !
Thee, shepherd, thee, the woods, and desert
caves,

With wild thyme and the gadding vine o'er-
grown,
And all their echoes, mourn.

All this was formal according to the
scholarly fashion of the times, but it
was beautiful beyond all other formal
English verse.

His mother's failing health had kept
him at home, but when she died he set
out to see for himself those wondrous
towns and countries of the Continent
whose stories and literature he knew so
well. So for about fifteen months he
wandered among the storied towns of
Italy and France, and the influence
of the classic scenes of Italy did much
to shape his thoughts towards the later
poetical achievements of his life. He
made many friends, especially in Flor-
ence, and paid a visit to the famous
Galileo, at that time an old man and
blind. He had meant to spend a longer
time in Italy, but the news of the political
troubles in England called him home.

MILTON RETURNS TO LONDON ON THE EVE OF THE CIVIL WAR

When he returned to London in
1639 the struggle between the people
and the king, which three years later
resulted in the Civil War, had become
so serious that the whole country was
unsettled. Milton was a man of peace,
and instead of taking part in this great
agitation, except by writing a series of
bitter attacks upon the bishops, he
devoted himself to the quiet task of
teaching, and had a sort of boarding-
school for a number of years in Aldersgate

Street. But the bitterness of the struggle
which was going on in these unhappy
days entered into the poet's life in a
strange way.

He married a lady who belonged to a
Royalist family and had been brought
up with the gay manners of the Cavaliers,
who were the opponents of the Puritans.

MILTON MARRIES A ROYALIST LADY BUT IS STAUNCH TO THE PURITAN CAUSE

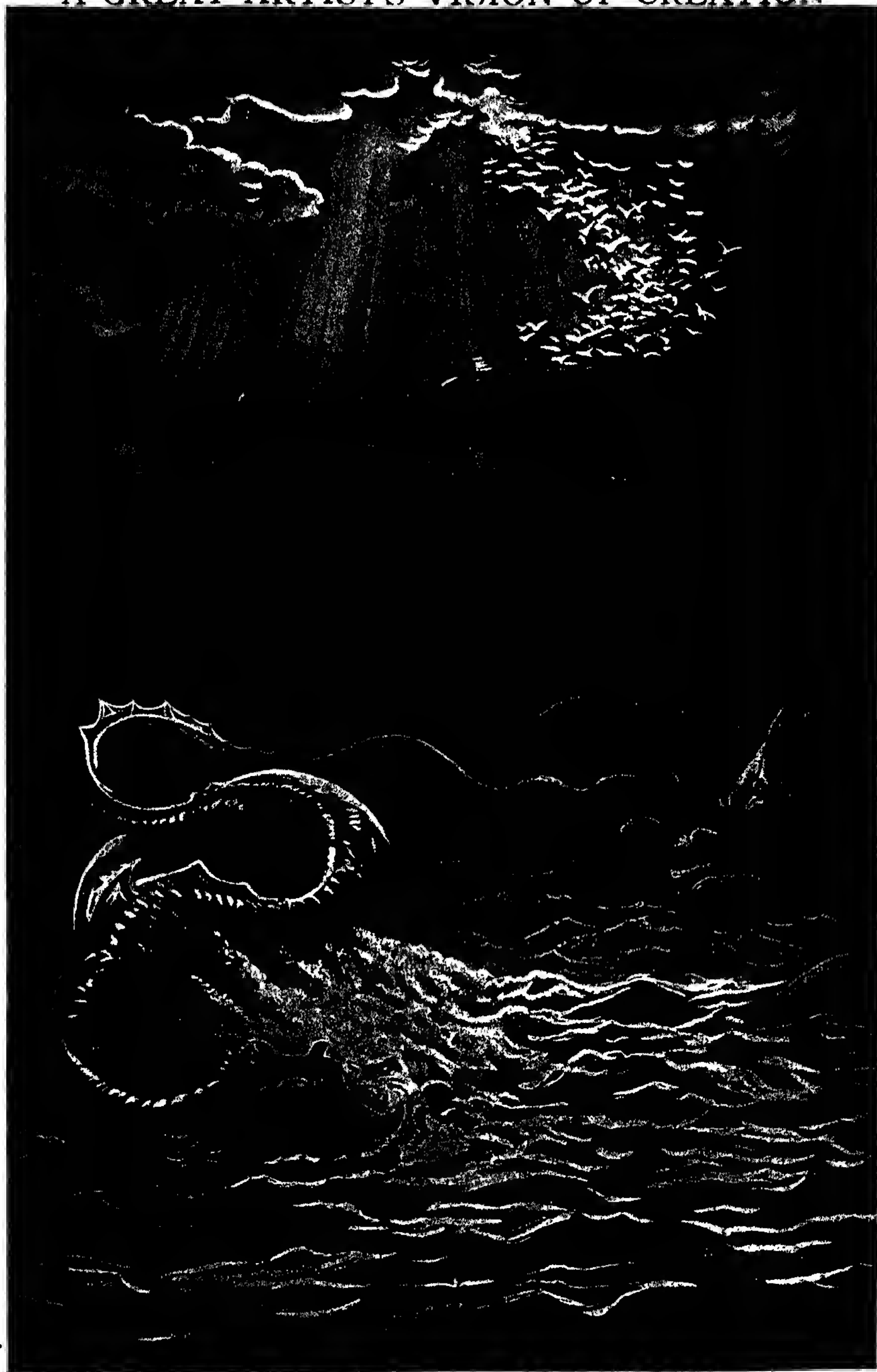
As Milton was, in his ways of life, the
gravest and most frugal of Puritans, it
was not likely that his young wife
could immediately find happiness with
him, and after a few weeks she returned
to her father ; but two years later,
when the fortunes of war had gone
against the Royalists, and Mary Milton
had learned that life is something more
than dancing and merry parties, she
returned to her husband, and even her
father was glad to have the shelter of
the poet's roof.

Milton, in the meanwhile, had been
writing not poetry but prose, and his
finest work of this period was entitled
"Areopagitica." That is a Greek word
for an oration addressed to the ancient
Council of Athens, which was known as
the "Areopagus," and Milton gave this
title to his work because it was addressed
to the Parliament of his own country.
The "Areopagitica" is a noble plea for
liberty of thought and especially the
right to publish in print one's honest
opinions, and is regarded as one of the
finest examples of English prose writing.
Another prose work of Milton's, in which
he defended the execution of Charles I.,
had an important bearing on his life,
for it was esteemed so highly by the
Puritan Government that Milton was
appointed Latin Secretary to the Council
at a handsome salary. His work was
to draft the correspondence of the
Government with foreign Powers, which
was then carried on in the Latin language.

THE SAD, SIGHTLESS DAYS OF THE CLOSE OF MILTON'S LIFE

A new period of the poet's life now
began. Eminent in the public life of
his day, his great literary powers were
employed, not only in translating State
correspondence, but in defending the
Puritan Government against its critics
on the Continent. In 1653 he was left a
widower with three young daughters to
look after ; but the greatest trial of
his life befell him about the same time.

A GREAT ARTIST'S VISION OF CREATION



Doré's picture of the creation of birds and sea animals in the childhood of the world.
This is one of the famous French artist's illustrations to Milton's "Paradise Lost."

His eyes, which had been weak from boyhood, now failed him completely, and by the year 1654 the poet was blind. Still he bravely faced his work as Latin Secretary, first with an assistant, and afterwards with the aid of a colleague, Andrew Marvell, who was himself a poet of great power, and a man of fine character. For the sake of his motherless children he married again, but his second wife died some fifteen months after the wedding; so that Milton's daughters were left without a mother's guidance, and in later years were a trial to their sightless father.

As the Protectorate drew to a close, Milton turned to the task of writing the great poem he had always meant to write, and probably it was fairly well advanced when the return of Charles II. caused the poet to hide from fear of his political enemies. They, however, allowed him to live in peace, and perhaps by 1653, certainly by 1655, "Paradise Lost" was finished.

The writing of "Paradise Lost" was, to Milton, a religious exercise. His aim was to "justify the ways of God to man," and he began by humbly asking the Divine Spirit to instruct him while he told of the fall of angels and of man. A spirit of profound reverence, which suits well the dignity of the blank verse, is preserved throughout. The tone of the poem is lofty, majestic, and pure.

No other poet has such power of imagination, creating scenes and beings beyond the reach of human experience, and giving them life, pictured in great words.

The great poem is written in what is known as epic form. It is based on scripture, and tells the story of the angels who fell from heaven, and the temptation and fall of man. Like all epics, it commences in the middle of the tale. The rebel angels, cast "with hideous ruin and combustion down to bottomless perdition," regain their steadfastness of mind in the midst of the fiery gulf. Satan, the great rebel chief, is the first to recover himself and make his way to the shore of the "inflamed sea." There he calls his hosts around him in orderly array, and Azazel, "a cherub tall," unfurls his mighty standard. Here is the picture of the bad, sorrowful angel as he prepares to speak to his downcast host of followers:

He, above the rest
In shape and gesture proudly eminent,
Stood like a tower. His form had not yet lost
All its original brightness, nor appeared
Less than an Archangel ruined, and the excess
Of glory obscured: as when the sun, new-
risen,
Looks through the horizontal misty air
Shorn of his beams, or, from behind the
moon,
In dim eclipse, disastrous twilight sheds
On half the nations, and with fear of change
Perplexes monarchs. Darkened so, yet shone
Above them all the Archangel. But his face
Deep scars of thunder had intrenched, and
care
Sat on his faded cheek, but under brows
Of dauntless courage and considerate pride,
Waiting revenge.

This great chieftain of the underworld then speaks to his comrades in guilt and excites them to further war, but war by guile, against Man, that thereby God may be grieved.

"But these thoughts
Full counsel must mature. Peace is de-
paired;
For who can think submission? War, then,
war
Open or understood, must be resolved."
He spake; and, to confirm his words, out-
flew
Millions of flaming swords, drawn from the
thighs
Of mighty Cherubim. The sudden blaze
Far round illumined Hell. Highly they
raged
Against the Highest, and fierce with grasped
arms
Clashed on their sounding shields the din of
war,
Hurling defiance toward the vault of Heaven.

The exiled fiends now proceeded to build themselves a gorgeous palace-home, Pandemonium, and there they sat plotting—

A thousand demi-gods in golden seats.

They resolve that they will try to injure man, of whose creation in the Garden of Eden they have heard rumors.

Satan volunteers to go in search of the new world, and, aided by Sin and Death, comes at last through dreadful chaos to where it hangs suspended from heaven by a golden chain.

The poet now bursts into an invocation to Light as a prelude to a picture of heaven, and pitifully laments his own blindness.

With the year
Seasons return; but not to me returns
Day, or the sweet approach of even or morn,
Or sight of vernal bloom, or summer's rose,
Or flocks, or herds, or human face divine;

JOHN MILTON AND HIS POEMS

But cloud instead, and ever-during dark
Surrounds me, from the cheerful ways of
men
Cut off.

In heaven God sees Satan approaching
the world, and foretells to His only Son
how man will be tempted and will fall,
but the Son declares that He will become
man and bring salvation to the race.

Adam and Eve, "God-like erect, with
native honor clad," as they pass hand
in hand,

For contemplation he, and valour formed,
For softness she, and sweet attractive grace,

that Satan himself almost relents, and
grieves over the evil work he has come
to do. Meantime, Uriel, who suspected



MR. OLIVER CROMWELL VISITS MR. JOHN MILTON

This fine picture, painted by Mr. David Neal, is printed by permission of the Berlin Photographic Company, New York.

Satan, now flying toward the earth,
disguised as a stripling cherub, meets
the Archangel Uriel, and, though Uriel
is "the sharpest-sighted spirit of all in
heaven," Satan deceives him into point-
ing out the way to Adam in Paradise,
for angels are so pure that they cannot
discern hypocrisy.

Lovely descriptions of Paradise follow.
So sweet is the place, and so noble are

Satan of looks "alien from heaven" as
he was flying towards the earth, descends
and warns Gabriel, chief of the angelic
guards of Paradise, to keep careful
watch.

'Now came still Evening on, and Twilight
gray
Had in her sober livery all things clad;
Silence accompanied; for beast and bird,
They to their grassy couch, these to their
nests

Were slunk, all but the wakeful nightingale.
She all night long her amorous descant sung.
Silence was pleased. Now glowed the firmament

With living sapphires; Hesperus, that led
The starry host, rode brightest, till the Moon,
Rising in clouded majesty, at length
Apparent queen, unveiled her peerless light,
And o'er the dark her silver mantle threw.

Adam and Eve retire to rest, and the
angel-guards, Ithuriel and Zephon,
searching the garden, find Satan squat-
ting like a toad close to Eve's ear to
taint her dreams.

Him thus intent Ithuriel with his spear
Touched lightly; for no falsehood can en-
dure
Touch of celestial temper, but returns
Of force to its own likeness.

So Satan changes into his own form
"of regal port, but faded splendor
wan," and, after some altercation with
his captors, flies away and hides himself
for seven nights, circling round and
round in the shadow of the earth.

In the morning Adam and Eve, lowly
bowing and adoring, offer to their
Maker their hymn of praise. The Al-
mighty now sends to Eden the Arch-
angel Raphael, who warns Adam of his
danger, and tells him the story of
Satan's disobedience and fall. He also
tells how the earth began, and why—
in order that another race, that of
man, might take in heaven the places
of the outcast angels, lest Satan should
feel a pride in having "dispeopled
heaven."

Satan now returns and takes the form
of a serpent. Eve in the morning sug-
gests to Adam that they shall work
apart in the garden till noon; he doubts
the wisdom of it, but after urging her to
be watchful at last gives way.

Searching through the garden, Satan
discovers her alone, and by flattery
persuades her to disobey the command
of God and eat of the forbidden Tree of
Knowledge. Fearing the effect may be
separation from Adam, she resolves that
he, too, shall eat, that they may live or
die together; and

He scrupled not to eat
Against his better knowledge, not deceived,
But fondly overcome by female charms.

The guilty pair soon become remorse-
ful, unhappy, and quarrelsome. Satan,
returning to Pandemonium, is received
with loud applause by all his followers,
which changes into a hiss as he and all
his hosts are turned into crawling snakes.

After a time both Adam and Eve feel
"sorrow unfeigned and humiliation
meek" for their fault, and the Arch-
angel Michael is sent to tell them that
their repentance will be accepted by
God, and that at last the race will be
redeemed; but meantime Paradise can
no longer be their home. The angel
having led them forth,

Some natural tears they dropped, but wiped
them soon,
The world was all before them, where to
choose
Their place of rest, and Providence their
Guide.
They, hand in hand, with wandering steps
and slow
Through Eden took their solitary way.

For this poem, which was published
in 1667, the poet only received fifty
dollars.

"Paradise Regained," written before
"Paradise Lost" was published, was
printed four years later—that is, in 1671.
It tells of the temptation of Christ by
Satan in the wilderness; but this later
Satan is a much less powerful conception
than the Satan of "Paradise Lost,"
and the poem, by comparison, is tame.

With "Paradise Regained" was in-
cluded "Samson Agonistes," the last
of Milton's writings, a drama modeled
on the Greek style, which nobly tells a
story of profoundest pathos. The pic-
ture of Samson, shorn, blind, in the
midst of his enemies, with the religious
hopes of his nation beclouded, is a
picture of Milton himself in his latter
days.

The story is nobly told, and when the
heroic end comes we feel the appro-
priateness of the calm lament—

Nothing is here for tears, nothing to wail
Or knock the breast; no weakness, no con-
tempt,
Dispraise or blame; nothing but well and
fair
And what may quiet us in a death so noble.

Three years after the publication of
"Samson" Milton died, not an old man
as we count age now, not yet sixty-six,
but his strenuous life passed, and his
noble youthful ambitions fulfilled. He
is buried in St. Giles's Church, Cripple-
gate, London, and no purer or more
lofty spirit has ever joined that

Garden of death where the singers whose
names are deathless
Singing together make music unheard of
men.

CONTINUED ON PAGE 5785.



THE KING'S GUEST

ONCE upon a time there was a rich man who was very cruel to the poor people living on his estates. They were very poor people indeed, and the rich man, who owned all the land and employed all the people, paid them very low wages, and oppressed them in every way. There came a famine in the land, and the poor people went to the rich man's castle and begged for bread, but the rich man refused them even a crust.

The king of the country heard all this, and he sent for the rich man to come and dine with him. You may imagine how proud the rich man was when the king's invitation came. He got out his best horses and his best carriage, and dressed up his servants in wonderful garments, and drove to the king's palace.

The king led him into the dining-room, where the table was laid for two. It was laden with lovely flowers and fruits, and foods of every kind, and there were the king's servants to wait upon each of them.

They brought the soup to the king, and he drank it, and when he had nearly finished it they brought the rich man some soup. But just as he was about to taste it the king finished his soup, and the attendants took the plates away, so that the rich man had not even a spoonful. Then they brought the king another dish,

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which he enjoyed, and just as he was finishing it they brought the rich man's dish. But before he could touch his knife and fork, the king finished, and both plates were taken away.

And so they brought the king dish after dish, and the king said continually to his guest how good these things were and he hoped the rich man was enjoying them. Yet every time the rich man tried to taste his food, his plate was taken away. At last the dinner ended, and the rich man had not had a single bite of food. Not even a crust of bread could he get, for the servants forgot to bring him any; and when you are dining with a king you must not ask for anything. And, of course, the rich man was very hungry, for he had been so busy getting ready for this dinner with the king, that he had had nothing to eat all day, and the dinner had lasted a long time.

When the meal ended, the king led the rich man into the hall, and bade him good-night, and set him out on the long road to his castle. Not a word did he say about the strange dinner at which his guest had eaten nothing, but the rich man went home almost famished with hunger, and he never forgot the lesson which the king had silently taught him. He was very good to the poor after that, and became their true friend.

THE STORY OF MIDAS

THE KING WHO HAD THE GOLDEN TOUCH

ONCE there was a king in Thrace named Midas, the same Midas of whom they said he had the ears of an ass. Now Midas loved gold, not because of what it would buy, or the good he could do if he had it, but because he was a miser. Even when he worked among the rose-trees in his beautiful garden, he wished that he could turn all the roses into gold. There was just one thing in the world that he loved more than gold, and that was his only child, his little blue-eyed, golden-haired daughter.

There was in that country a powerful youth named Dionysius, whom some call Bacchus in their stories. He was the spirit of the springtime, and of all youth and gladness. Now Dionysius had an old companion named Silenus, who had brought him up. And one day Silenus strayed into Midas' rose-garden, and as he slept in the shade of a rose-bush, the gardeners found him and brought him to Midas to be punished as a trespasser. But Midas was pleased with him, and made a great feast for him and sent him home.

Then Dionysius, who dearly loved Silenus, went to Midas, and said:

"Ask me what you will, and if it lies within my power, I will give it to you."

And Midas said with eagerness: "Let me have the golden touch."

Dionysius, who had thought that Midas, as a good king ought, would have asked for some gift which would have made his people happy, looked at him with sadness, and slowly said, "The gift is yours," and then he went away.

When the god was gone, Midas sank into his chair, and as he touched the seat it turned to gleaming gold.

He looked at it enraptured. He touched it. He rubbed it with the sleeve of his mantle to make it shine more brightly. There was no doubt about it. It was gold, pure gold, and with growing excitement he walked about the hall, touching things here and there as he went, until the great room flashed as the morning sun shone in upon it through the open doors and windows. When the hall was finished to his liking, he went out, and down into his garden of roses,

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leaving golden footprints as he went. The garden was a lovely spot. There were roses on every side, from the blooms of snowy whiteness that his little daughter loved, and flowers of palest pink, to great crimson beauties, with golden hearts. Their refreshing fragrance spread around, and rose upward to the blue sky above them. It was still early in the day, and the air was full of the song of birds, and the busy hum of bees. But Midas cared for none of these things. He was still hungry for gold, and he quickly went from bush to bush, touching each one as he went. At last his work was done, and as he turned away, the golden tinkle of the leaves and flowers, as they waved stiffly in the breeze, seemed to him the sweetest music he had ever heard.

In his excitement over the promise of the god, he had forgotten to eat breakfast. Now it was past noon, and, as he felt both hungry and thirsty, he hastened back to his golden hall, and called to his slaves to bring him food. They did so, and he sat down with eager appetite to eat it. But as the morsels touched his lips, the food turned to gold, and the wine and the water flowed tinkling back into the cups to settle in a solid mass of gold. He sat and looked aghast at his golden treasure, for of what use were golden cups and platters, if he must die of hunger? His gloomy thoughts were broken by the sound of bitter childish weeping, and as he raised his eyes, his little daughter came running into the hall, a spray of golden roses in her hand.

"Father, dear father," she cried, "some one has killed all our beautiful roses!"

"I turned them into gold, my child," said Midas gently; "they are far more beautiful so."

"Ah, no," said the little one; "put them back, father, put them back!" and as she sobbed out the words, she flung herself into his arms. Lovingly, he put his hand on her head, and began, "My little daughter," when he felt her stiffen in his arms, and in a moment he held only a golden statue.

Horried, he laid her down on a couch near by, and cried aloud for help,

but all his servants had fled in terror of their lives, and he was left alone.

All day the mourning father sat in the silent house, beside the statue that had been his child, hoping only that death would come soon, and take him too. But as the sun set Dionysius once more appeared, seeming to bring renewed life and joy into the lonely dwelling. Still, his face was stern as he said to Midas, "Are you yet satisfied?"

And Midas answered humbly: "I was wrong. There are many gifts that are better far than gold. I had them, and I did not know it. Is it too late? Will you take back the fatal gift? For myself, I ask nothing, but bring my little child to life, and let me see her skip about once more, before I die."

Then Dionysius said: "If I do, you will lose not only the golden touch, but all the gold that you have won to-day will be lost."

Midas started eagerly to his feet. "You will do it!" he cried.

And as Dionysius pointed toward the couch, he turned and saw his little daughter sitting on its edge, ruefully looking at the broken spray of roses in her hand.

"Father," she said, "I had a horrid dream. I thought that some one had turned our lovely roses into hateful, ugly things of gold."

"Shall we go," said Midas, "and make sure that it is not true?"

With a grateful heart, he turned to thank the god; but Dionysius, happy in the happiness he had given, had gone away. Then hand in hand, Midas and his little daughter went out into the silver moonlight, across the dewy grass, and into the gardens where the roses bloomed against the background of green trees beyond them, and the nightingale sang to his mate, as she brooded over her sleeping nestlings.

"It was only an ugly dream," the little girl said merrily. And her father answered, "Yes, my daughter; it was all a hateful dream."

THE LONELY SHEPHERD BOY

SOME years ago a little French boy was following his flock over the pasture-lands of Gascony. It was a lonely life, for he seldom saw any one all day, and sometimes he was out half the night, too. Nor did little Denys Puech like being a shepherd. His heart was not in his work, and to be a farmer, when he grew up, was not at all what he wished.

Even as a little child Denys had wanted to draw and carve everything he saw; and now, while his sheep nibbled the herbage, the boy modeled little statues out of clay, and baked them in the sun, or carved figures out of chestnuts or bits of wood. His fingers were always busy. Sometimes, when he could get paper, he would try to write verses.

At home no one wanted to read his poems or cared about his figures, and often Denys was restless and unhappy. A year passed, and one day his master told him to take a number of sheep to the fair at Estaing. Off he set with his charges, and when he came to the town he was filled with pleasure and surprise.

Presently Denys and his flock arrived at the bridge over the River Lot, and there, while the sheep went on, their young guardian stood still. For there, on the bridge, stood a statue of the

Bishop of Rodez. It was the first statue the boy had seen, and he stood as if turned to stone himself, gazing up at it with eyes filled with wonder and admiration.

Then a thought flashed into his mind. Gathering together a little heap of mud from the roadside, he began to make a figure like the bishop. The passers-by looked curiously at him as he worked on, forgetful of his sheep. Patiently he modeled the figure, carefully copying the very lace on the bishop's robes.

The little statue was nearly finished when a heavy hand fell on the boy's shoulder and a harsh voice began to load him with reproaches. It was his master; and one cannot wonder that he was angry, for his sheep were wandering all over the town, while the young shepherd stood there as if he had nothing to do but amuse himself.

"The lad is not fit for a shepherd!" cried his master.

"He will never do for a farmer!" sighed his parents.

So when Denys was sixteen, they gave way, and let him go to a studio and learn to be a sculptor.

The little herd-boy is now a famous man, and his beautiful statues are known to the whole of France, and far beyond it.

THE HUNDRED THOUSAND MONKEYS

THIS is a story that begins on the banks of the River Ganges, in India.

There are villages on the banks of the Ganges, and in one of them a little boy called Singh lived in a hut with his father and mother. It was his business to make curry for his father and mother while they were busy out of doors.

But one day Singh found it hot and also dull in the hut where he was busy with the curry. The sun was hotter still outside, but when he went to the door and looked out, Singh saw cool shadows under the tree, cooler than the

were snakes, spotted and shiny ones, brown and yellow ones, and black ones, and pale bright green ones, and they hissed and slid away into the long grass. There were bigger things, too.

Singh heard the bamboos crack and the branches break, and saw the long grass wave where the big beasts were stepping. He also heard them roar. He thought they would probably eat him, but he did not mind, because his body was sore. And then a monkey dropped to the ground in front of him. The monkey had been hanging by one



"AAH!" SAID A HUNDRED THOUSAND SERIOUS-FACED APES

This picture is from the painting by J. C. Dollman, A.R.W.S., by permission of Sir Alfred Hickman, Bart.

dark of the hut, because of the breeze that was lifting the big leaves and letting them flap softly back again. So Singh went and lay in the shadow of the tree.

Presently his father and mother came back hungry for their curry, and when they found that Singh had forgotten all about it, they beat him till he was very sore, and then made curry for themselves.

Singh ran away into the forest.

There were parrots in the forest, green and red and yellow, and they shrieked loudly as they flew from the palm to the banyan tree, and from the acacia to the feathery bamboo. There

hand from the bough of a tree watching Singh for some time.

"What is the matter with you?" asked the monkey.

"I have been beaten," said Singh.

"No, no, that is not what is the matter with you," said the monkey.

"What is it, then?" said Singh.

"Why, yes. Your beating is over, and your skin is already not so sore as it was. The matter with you is that you want to tell a hundred thousand people about it, and there's no one to listen to you."

"Yes," sobbed Singh, "that is quite true. They are eating curry in the

village, and if I try to tell them about it they will only beat me again, and make me more sore."

"Come with me," said the monkey, "and you shall tell a hundred thousand people, and they shall weep for your sore body, and you will feel better."

He caught Singh with his skinny hand, and ran through the undergrowth of the forest. Singh ran with him for a long time. He was too busy dodging branches, and jumping over fallen logs or puddles of mud, to notice how they went; so that he was not very surprised when the trees came to an end, and the forest opened into a white old city lying in marble ruins. There were fallen temples and wonderful broken pavements, and everything shone dead white in the hot, glaring Indian sunshine.

There were no people in the city, but as for monkeys—there seemed to be more than Singh believed there were in all the forests of the world.

"Tell these people," said the monkey who had brought him. And when the other monkeys crowded up, this monkey looked laughingly at Singh, and went away, and sat alone on the marble steps of what had long ago been a temple.

"I have been beaten and my back is sore," began Singh.

"Aah!" said a hundred thousand serious-faced apes, their eyes fixed steadily on his face.

"Because I lay in the sun and neglected the curry while they were working."

THE KAFIR AND THE LION

AN old Kafir was trudging slowly back to his master's farm in Northern Rhodesia when he heard a sound in the bush that made his blood run cold. A white stranger would not have known what the slight but continual crackling in the brushwood meant, but the native knew, and trembled.

A lion was following him, and watching him as a cat watches a mouse. But, not being emboldened by hunger, it was waiting till nightfall to make its spring. Unhappily, it was already growing dusk, and the farm was still far off, and the old man had no other weapon than the stick that he was tottering along with.

How could he escape? There was no bush high enough to protect him from the lion. But as he went along the old negro worked out a plan, a simple but

"Aah!" said the hundred thousand apes, all looking very much interested.

"My name is Singh, and I am very miserable."

"Aah!" said the apes.

"The people of the village have cast me out with a sore skin and no curry."

"Aah!" said the apes.

"A sore skin and no curry," said Singh again, for he could not think of anything else to say.

"Aah!" said the apes, as if these were only the beginnings of his troubles.

Singh could not think of anything else, and he was very unhappy, because he wanted to complain.

"Aah!" said the apes.

"A sore skin," said Singh miserably.

"Aah!" answered the apes impatiently. He heard some of them say, "Is that all?"

"No curry," he said once more; and then getting up quickly, he looked for the monkey who had brought him, and saw him sitting on the temple steps.

"Please take me back," he said. "I am not miserable enough for these people."

And the monkey said, "I thought so," and laughed, and took him back. But he was not beaten again. His mother was glad to see him, and gave him hot curry and put him to bed.

Now, that is the best of all ways to be comforted. If ever you feel miserable, go and tell it to a hundred thousand serious-faced monkeys, and you will find that you are not miserable enough.

very daring plan, which no white man would have thought of.

On coming to a low hill that sloped gently up on one side, and then ended in a sudden precipice, the native slowly walked up it, and sat on the edge of the rock. Half turning his head, he saw the lion watching him.

As soon as it grew dark, the old man climbed down to a footing underneath the precipice, and, putting his hat and coat on his stick, he lifted it above the rock. In the meantime the lion had been creeping up. When within striking distance, he made a sudden leap at the hat and coat and stick, and over the precipice he went, and landed on the plain with a broken neck. The next morning the wise old Kafir had the pleasure of skinning his dreaded enemy.

PROVERB STORIES

Every nation has its proverbs—short, pithy sayings containing much wisdom. The stories on this page illustrate some of these proverbs.

THE FARMER AND HIS SACKS

Repay Kindness with Kindness

A FARMER was taking his grist to the mill in sacks thrown across the back of his horse. On the way, the horse stumbled, and one of the sacks fell to the ground. It was too heavy for him to lift, and he was at a loss to know what to do. As he stood wondering, he saw a horseman coming towards him.

When the rider came nearer the farmer saw that he was none other than the nobleman who lived in the great house at the top of the hill. It was impossible to ask help from one of his rank.

The nobleman, however, was something more than a man with a title—he was a gentleman, and he dismounted.

"I see you have had something of a mishap, friend," he said. "It is fortunate I came along just now, for help is not always handy on these roads."

So saying, he took one end of the sack, the farmer took the other, and the load was once more placed on the horse's back.

"My lord," said the farmer, lifting his cap, "how can I thank you?"

"Easily enough, my good fellow," said the nobleman. "Whenever you see anyone in a difficulty, help him all you can, and that will be thanking me."

THE BAG OF PEAS

There's no Luck in Laziness

"DO you believe in luck?" said a king to one of his officers.

"Yes," answered the officer, "I do."

"Ah!" laughed the king. "I am afraid you could not prove to me that there is any such thing in the world."

"That may be, your Majesty," answered the officer; "but if it please you, we might try to find out. I have thought even now of a plan."

He whispered in the king's ear, and his Majesty replied:

"Very good, very good indeed; let us try it without loss of time."

So that night the officer hung a bag from the ceiling of one of the rooms in the palace. What it contained none but the king and the officer knew. Then two men were put into the room. When the door was shut, one of the men, who

believed in luck, laid himself in a corner and prepared for sleep; the other looked about him, and at once saw the bag hanging from the ceiling.

He reached up and put in his hand, and found some peas. "One might have a worse supper," he thought, as he took out a handful and ate them.

Presently he came on some diamonds, but, in the dark, he thought they were mere stones, and of no value. So he threw them towards his companion, saying:

"Take the stones for your idleness."

In the morning the king and his officer came to the room, and told each man he might keep what he had found. The one man got the peas which he had eaten; the other got the diamonds.

"Now, your Majesty," said the officer, "what do you say?"

"Truly," answered the king, "you seem to have the best of the argument. There may be such a thing as luck; but it is as rare as peas mixed with diamonds, and so let none hope to live by luck."

THE TWO KINGS

The Second Word Makes the Quarrel

THERE was once a king who sent a message to the king of a neighboring country, saying:

"Send me a blue pig with a black tail, or else——"

To this the other king replied:

"I have not got one; and if I had——"

When the first king received this answer he flew into a great rage, and declared war against the other. For many weary months fighting went on, but at last the two kings arranged a meeting.

"What did you mean," said the first, "by saying, 'Send me a blue pig with a black tail, or else——'?"

"Why," he answered, "I meant a blue pig with a black tail, or else some other color. And now let me ask you what you meant by your message, 'I have not got one, and if I had——'?"

"My meaning was simple enough; for, of course, if I had had such a pig I should have sent it."

"Dear me, how foolish we have been! Let us make peace and be friends."

So peace was made, and the story was written in the annals of both countries to serve as a warning to those that should come after to be slow to take offence.

THE NEXT STORIES ARE ON PAGE 577.

The Book of FAMILIAR THINGS



A great modern ironworks, showing the furnaces and the wharf at which the iron ore is landed.

MAKING IRON AND STEEL THE WONDERFUL SIGHT IN OUR GREAT FURNACES

PERHAPS the boys and girls of to-day do not realize that people did not always have high buildings like those we see around us everywhere, nor such great iron bridges as now span our rivers. War ships and guns such as we now have were never thought of a few years ago, and our ocean steamships are gigantic affairs compared to those of former times. So, too, our powerful machinery, steel rails, and cars, and many other things made of iron and steel, are all bigger and better than those people used not so long ago. This all comes about because of the improvements in the making of iron and steel.

Iron and steel are now the commonest and cheapest of all the metals. This was not always so. The metals, gold, silver, and copper, were used by the ancients long before anything was known of iron. I think you will easily see why this was so when I tell you that iron is almost never found in a native state as we find gold, silver, and copper. Very rarely, almost pure iron is found in rocks which show evidences of great heat, and some meteorites which drop from the skies

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have iron in them. A man might dig for a lifetime deep down into the earth and never come across any iron. This is because it is almost always found in combination with some other element and must be reduced, in order to be of any use to us. Now the Greeks had discovered how to reduce the ore to make iron and no doubt the Romans learned of them. The people of Great Britain, too, had found a way to produce iron, for when the Romans came to England they found iron works in the Forest of Dean.

Of course the methods of all these people were crude and primitive when compared with our way of doing it to-day. You know in order to reduce the ore to iron it must be placed in a furnace with fuel and a blast of air strong enough to increase the heat until the ore melts. The Greek and the Roman way was to heat the ore to a melting point in a furnace which was nothing more than a pit surrounded by walls of clay about a foot high. The fuel for this crude furnace was charcoal. Layers of broken iron ore and charcoal were placed alternately in the furnace until the hole

was filled, when a layer of charcoal was heaped over all. A rude form of bellows made from skins furnished the blast. After some hours of firing, the melted ore and cinders were found in a lump at the bottom of the furnace. As the cinders were lighter than the ore they settled on top of the mass. The iron worker broke off this cinder lump and what remained was iron. The iron made in this way was very good indeed, but the great cinder heaps left in Yorkshire by the Romans show us that much good material was wasted. In fact, the cinder heaps contained so much iron that they served as ore for twenty furnaces working constantly for about three centuries.

THE FIRST IRON MADE IN AMERICA AT JAMESTOWN

In the year 1624 a little colony of Englishmen living at Jamestown built furnaces there on the banks of Falling Creek, and produced the first iron made on this continent. This started the iron production in America, and later it was taken up by the people of Massachusetts, Connecticut, and Rhode Island, for much "bog" and "pond" ore was found in these eastern states. Furnaces were built at that time close to the source of the iron ore and the forests which served or furnished the fuel. Iron ore was found in several other colonies, and iron was soon common in the New World.

As I have told you, charcoal or burnt wood was the only fuel used at that time. The English were alarmed at the rapid destruction of their forests, and asked what they would do for fuel for their furnaces when the timber was all used up, in much the same way as we are asking to-day what we shall do for fuel when our coal fields give out. They were forced to look for something to take the place of charcoal. Coal was suggested as a substitute, but people laughed at the idea that coal could do the work of heating the furnace as well as what they had been using.

WHY COAL DID NOT MAKE GOOD IRON

Coal had already been tried for the smelting of iron but the plan was not understood. We know now that it failed because coal was too soft to stand the weight of the iron ore when placed upon it. The weight packed the coal so tight that the air could not find its way through the mass. The coal could not

burn fast enough to produce a high temperature during the smelting process. However, during the process it was observed that much of the coal that was heated burned into coke. This coke showed the power to hold up the ore without being crushed, just what coal was unable to do. From that time coke was the fuel and remains the fuel to-day for smelting ores.

In the United States, however, the conditions were different. The forests were large and afforded plenty of wood for making charcoal. In fact, it was so plentiful that charcoal was used here for fifty years after the English had begun to use coal, and the product from such furnaces was so much better than that of the coal furnaces that the Americans were encouraged to ship their charcoal iron-metal to England. In time, though, the Americans were forced to face the same problem about their wood as the English had met. Fortunately, at about this time coal came into common use in the new country, and soon attention was turned to its manufacture into coke, for its use in the growing iron industry.

In 1819 and again in 1841 the attempt had been made but did not meet with success. To encourage experimenting, in 1835, the Franklin Institute of Pennsylvania offered a premium of a gold medal to the person who should manufacture in the United States the greatest quantity of iron from ore during the year, using no other fuel than bituminous coal.

THE COAL AND IRON BELT, OR WHERE THE COAL AND IRON ARE FOUND

The greatest iron ore region in this continent lies near the shores of Lake Superior. The picture here shows an open pit iron mine of the famous Mesaba Range near Lake Superior in Minnesota. One can see how readily the ore can be taken from the open pit by steam shovels and deposited at once in the cars. These deposits are 300 feet deep in some places. A single mine in Minnesota is said to have produced 1,681,000 long tons in one year, more than was produced in all America before 1854. One would naturally expect the iron industry to be placed near these pits, but this is not the case. The great iron manufacturing centres are Pennsylvania, Ohio, Illinois, New York, West Virginia, and Virginia, where less iron is found, and all the iron ore must be shipped from ports on the

shores of Lake Superior to these places. Alabama is an exception, for there both coal and iron are found close together.

If you follow the line of the bituminous coal belt, from which coke is made, you will see that it runs through the states I have just mentioned. This is called the Appalachian coal belt and is about 800 miles long and about 150 miles wide and contains within its borders the great centres of our iron and steel industries. In fact these industries will be found to lie close to the source of the fuel rather than the source of the ore.

HOW THE FUEL IS MADE THAT SUPPLIES THE GREAT IRON FURNACES

Success in the iron and steel industries is due to the making of coke out of coal, but not until the year 1880 did the manufacture of coke mean much to the iron industry. Before that time very little coke was made in the United States. About that time, making coke out of soft coal in what is called a beehive coking oven attained a position of importance. The name of the oven was no doubt suggested from its resemblance to the ancient dome-shaped beehive.

These ovens have an opening at the top through which five tons or more of coal is dumped. This charge of coal falls on the bottom of the oven, and is then lighted by placing shavings of wood on the top of the heap. The process of fusing and coking now begins on the top surface of the charge of coal and goes down through the mass. It takes about forty-eight hours to burn this five tons of coal into coke.

This method is yet most used in the United States, but wastes some of the most valuable parts of coal. These are driven off in the gases and lost. Ammonia, which is very valuable, is one of them, and the tar from which medicines and colors, as well as many other things are made, is also lost. Sometimes these gases are conducted through a pipe and burned. The latest ovens cook the coal in closed ovens called retorts, and all the valuable gases are saved. There are several kinds of retort ovens in use in the United States.

THE BLAST FURNACE WHERE THE ORE IS MELTED

This furnace is the first step in the making of iron and steel, and we shall now tell you something about it. It is a tall cylindrical iron or steel shell,

seventy-five and sometimes one hundred feet tall, lined with fire brick on the inside. The fuel for this furnace is coke, which is the blast furnace fuel everywhere. Nearly all the coke manufactured to-day is burned up to make heat for melting the ore into pig iron.

The description of the blast furnace given under the picture, and the diagram, will tell you how it is made and will show you how it works. You will learn, too, that the product of this furnace is pig iron. This is the raw material for the puddling furnace, which produces wrought iron, and for the cupola furnace, which produces cast iron, the Bessemer Converter for the making of soft steels, and the open hearth furnaces for carbon steels and the crucible furnace for high carbon or tool steels.

THE PUDDLING FURNACE WHICH MAKES ONE KIND OF IRON

In 1784, Henry Cort invented the puddling furnace for the reducing of pig iron by a coal-heated process. Wrought iron, the product of this furnace, is very tough metal and will stand shocks but is easily welded. Pig iron as it comes from the blast furnace is put on the platform, or hearth, of the furnace. The fire-box lies in the end of the furnace, instead of underneath, and as the fire increases in temperature, the burning gases from the coal pass over the iron.

This heats the mass of pig lying upon the hearth. In a little while the iron begins to melt and the slag forms little pools on the bottom of the furnace. In about an hour the puddler stirs the whole mass with a long bar of iron called a rabbling bar. He keeps the temperature of the metal just below the melting point. At this temperature iron is in a pasty condition. By rolling it around he forms a ball weighing from 150 to 200 pounds. He is careful to see that the metal does not get too hot, for, if it should, it could not be gathered into a ball. So the heat is regulated by opening and closing the damper on top of the chimney. When the ball is made it is taken out of the furnace by the aid of a pair of tongs and placed on wheels, and rushed off to the squeezer, where all the slag or impurities are squeezed out of it. Then it is put between the rollers and reduced to the proper size. This is called wrought iron and is placed on the markets of the world to be sold for making chains, grills, horse-

shoes, bolts, nuts, car handles, steps, and the like. It is tough and not brittle like cast iron.

THE FURNACES THAT MAKE STEEL FOR GUNS AND ARMOR PLATE

The product of the open hearth furnace is a very fine steel, out of which is made armor plate used on war vessels. Large guns are made from this steel, steel castings, large propeller shafts for vessels, crank shafts, and also most of the steel used on automobile forgings are made from this product. When you visit a steel mill where these furnaces are in operation you will see that the charging door is about fifteen or twenty feet above the floor level. The brick work below the furnace hearth is built up in a checker system, through which the gases rise, and are heated before reaching the melting zone.

The fuel used for the open hearth furnace is coal gas. It is the gas that is heated to a white heat on its way to the melting zone. This, you see, keeps the furnace in a very high temperature all the time, for there is no cold air of any kind entering the furnace while the furnace is in operation. In many ways this furnace is the most satisfactory of any mentioned for producing large quantities of steel. The molten metal can be held in this furnace any number of hours, during which time tests can be made until the required carbon point is determined. This assures a constant quality of steel. Sometimes small amounts of other metals are introduced into the steel for special purposes. For example, a very small amount of nickel increases the strength of the steel very much. Several other metals, such as chromium, and vanadium, are also used to make steel used in motor cars or in machinery where both strength and lightness are necessary.

THE CONVERTER THAT CHANGED THE WHOLE HISTORY OF STEEL-MAKING

The pictures and the description tell the story of Sir Henry Bessemer's great invention for changing pig iron into steel without the use of fuel. Molten cast iron is put into the converter. The blast added to the heat already in the cast iron, increases the heat enough to burn all the impurities out of the molten mass, and most of the carbon as well. Since good steel must have some carbon, the right proportion is put back into the

molten steel. This makes a steel that is used for building material, bridges, steel cars, vehicles, railroad rails, fire escapes, grills, and is now replacing wrought iron for many things. It has no fibre like that of wrought iron, but can be twisted, bent, drawn out and shaped to any desired form without danger of breaking. Many blacksmiths prefer this steel to wrought iron for their work. This was the first cheap steel manufactured, and the result of the discovery, or invention, has been to increase the use of the metal.

THE STEEL THAT IS USED FOR THE CUTTING TOOLS OF THE WORLD

Crucible steel is found in the market under four different names. It is sometimes called (1) crucible steel, because it is melted in a graphite pot or crucible; (2) high carbon steel because it contains more carbon than any of the steels; (3) cast steel because it is cast into ingots and hammered into shapes for the market; (4) tool steel because all cutting tools are made from it, including our table cutlery, butcher knife blades, pocket knife blades, files, surgical instruments, and the like.

The method of manufacturing this steel is one of the simplest, yet great care must be exercised during the melting process. Refined iron is placed in a graphite pot or crucible with a certain amount of carbon. The crucible is then placed in the melting pit, which is a hole made in the ground, about four feet deep, lined with fire brick. The fuel for melting the metal in these pots is gas, preheated in the same way as was that of the open hearth furnace. It takes about three hours for the metal to melt and during that time the temperature of the furnace reaches 3000° F.

You can see that men who have this kind of work to do must be trained especially for the purpose. Their work days are only four to five hours long, and during that time they are dressed either in asbestos clothing or in overalls saturated with water. This is done to keep the heat away from their bodies while lifting the pots up from the pits. If they were not strong they could not stand the intense heat. It is the skill required in handling the hot metal just at the right time and the difficulty in making men fit to do this work that keeps tool steel at the high price asked.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5755.

THE OPEN PIT MINE FROM WHICH THE ORE COMES



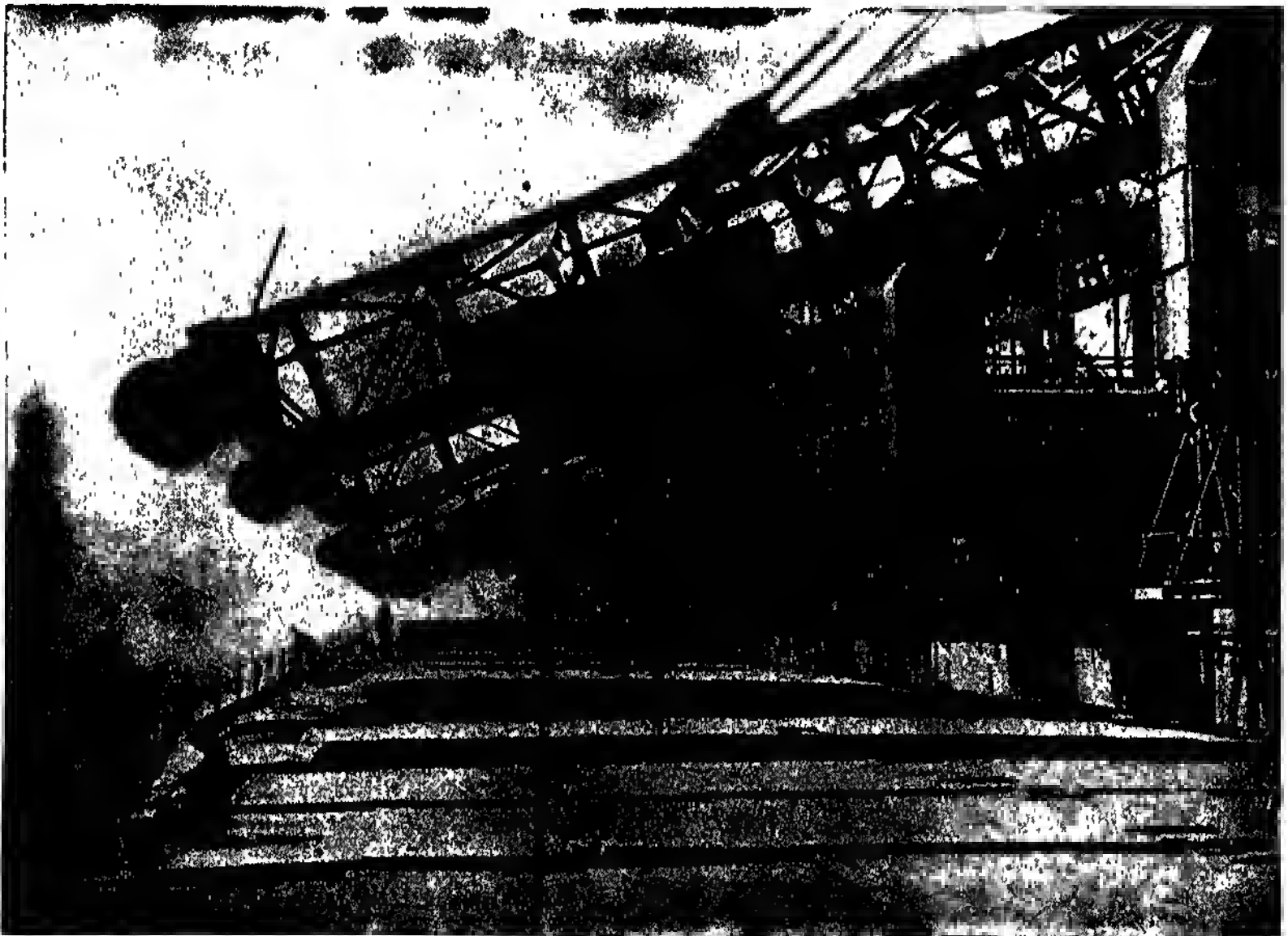
More than half of the iron ore mined in North America comes from the open pit mines of the Lake Superior region. The deposits are sometimes three hundred feet deep and seem almost inexhaustible. Here you see a steam shovel digging into a bank of ore in Minnesota, and loading the cars. The ore is not hard but is like a rotten stone you sometimes see. In another place we show how the steam shovel is at work digging the Panama Canal. One of these machines does more work than a thousand men could do with picks and shovels. In the next picture we shall follow the ore to the furnace, and see what happens.

Picture by courtesy of the Illinois Steel Co.

FOLLOWING THE ORE TO THE FURNACE



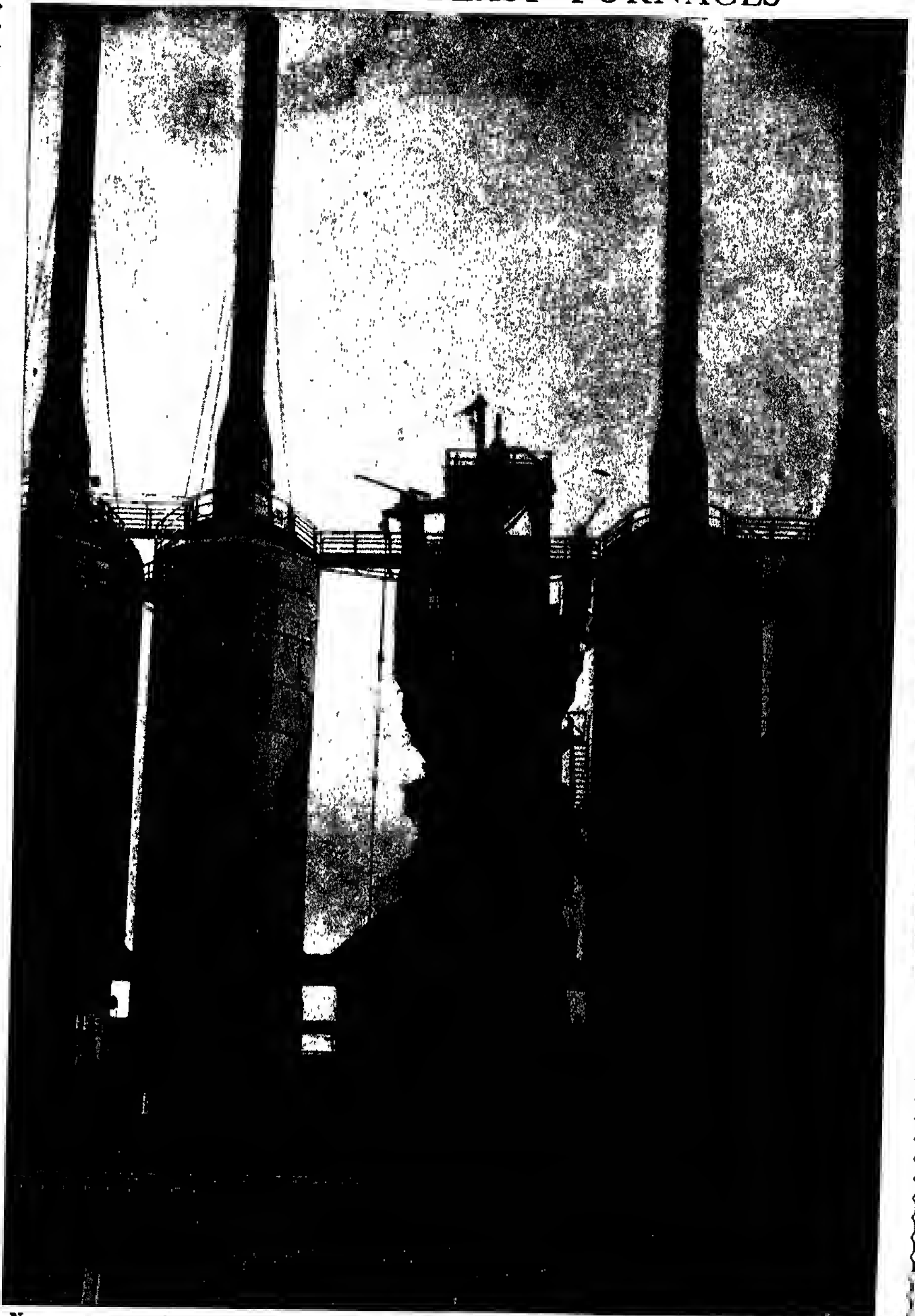
The iron ore which we saw the steam shovel loading into the cars is often transferred to great ore ships which carry it across the lake, either to the furnace or to another transfer point. Here we see one of the great ore ships, which is being unloaded. Some large and strong steamers are engaged in carrying ore which is finally to reach the great furnaces in the Middle West, or the East.



Think how long it would take to unload one of these ships by means of shovels. This is a close view of the scoops you can see above. When let down into the ship they gather up hundreds of pounds of ore and quickly run along the framework to the place where they dump the load and return for more.

Pictures by courtesy of the Illinois Steel Co.

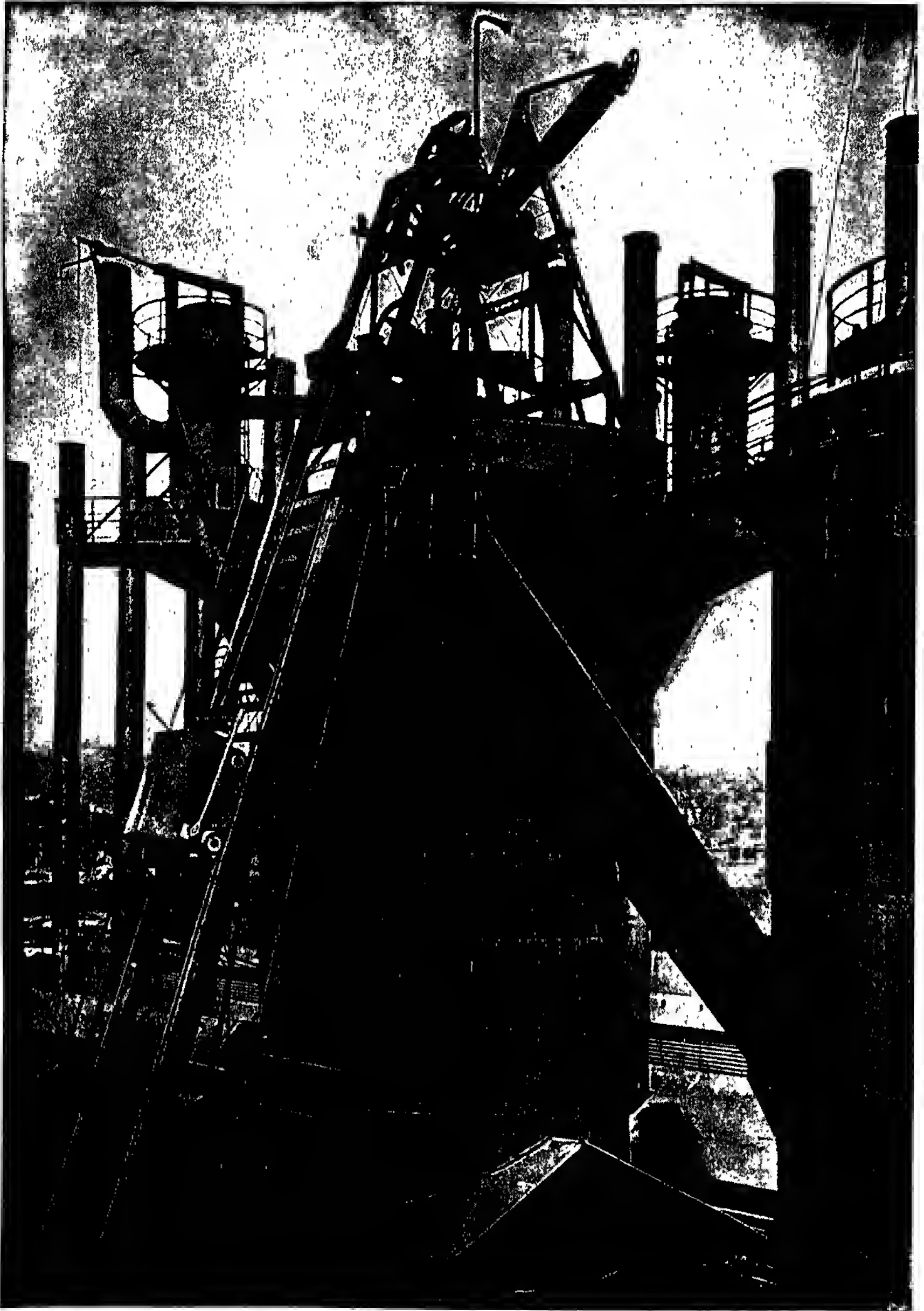
THE GREAT BLAST FURNACES



Now we come to the great steel works, the name of which you would recognize if we were to tell you. Here is a row of the blast furnaces, which are fully described on other pages, where we show you the top of one and a diagram of the interior of another. In the centre is the hoist which raises the ore, the coke and the limestone from the railway cars at the bottom to the top, where they are fed into the great monsters. Sometimes a great establishment has dozens of these furnaces.

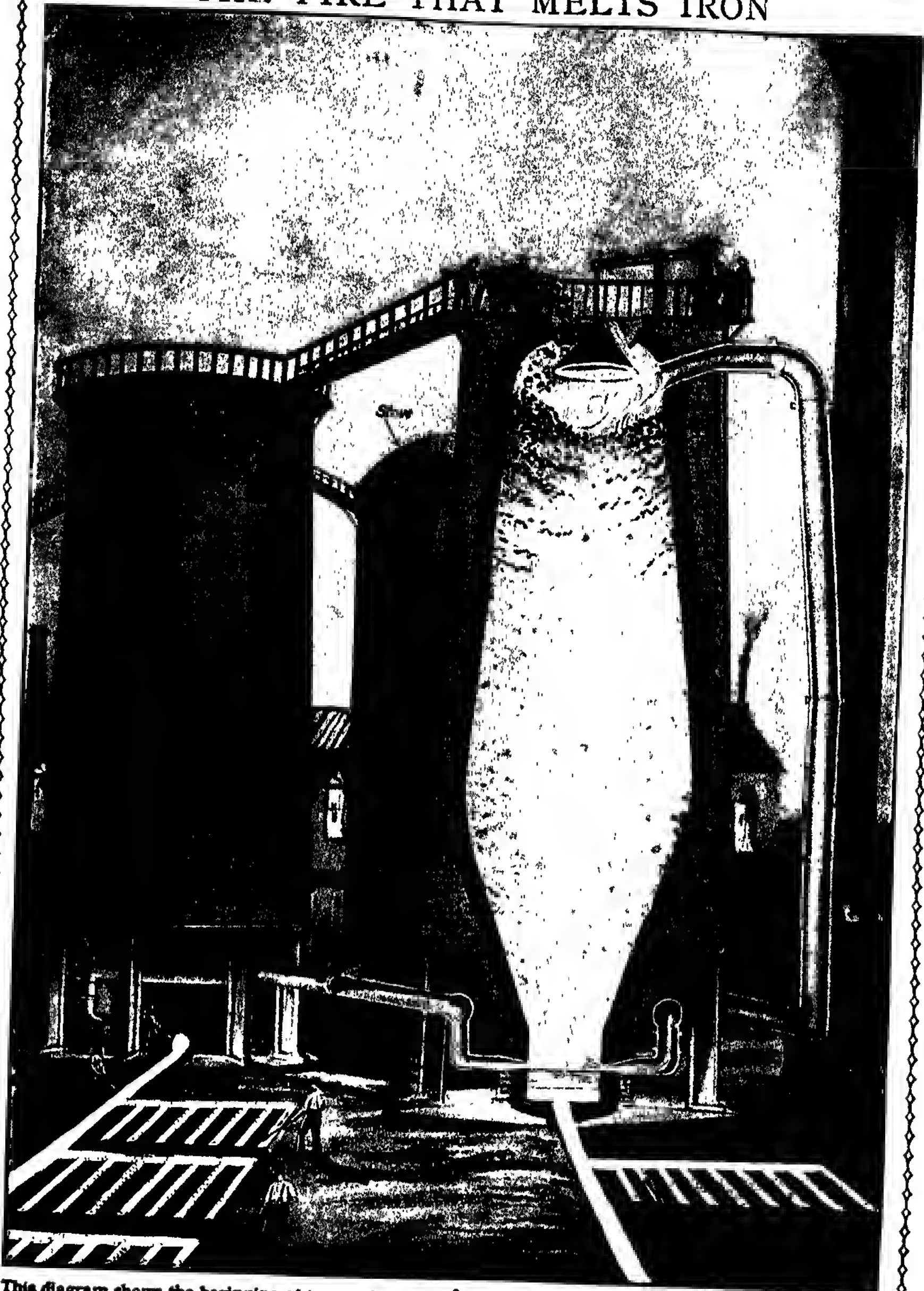
Picture by courtesy of the Illinois Steel Co.

THE TOP OF A MIGHTY BLAST FURNACE



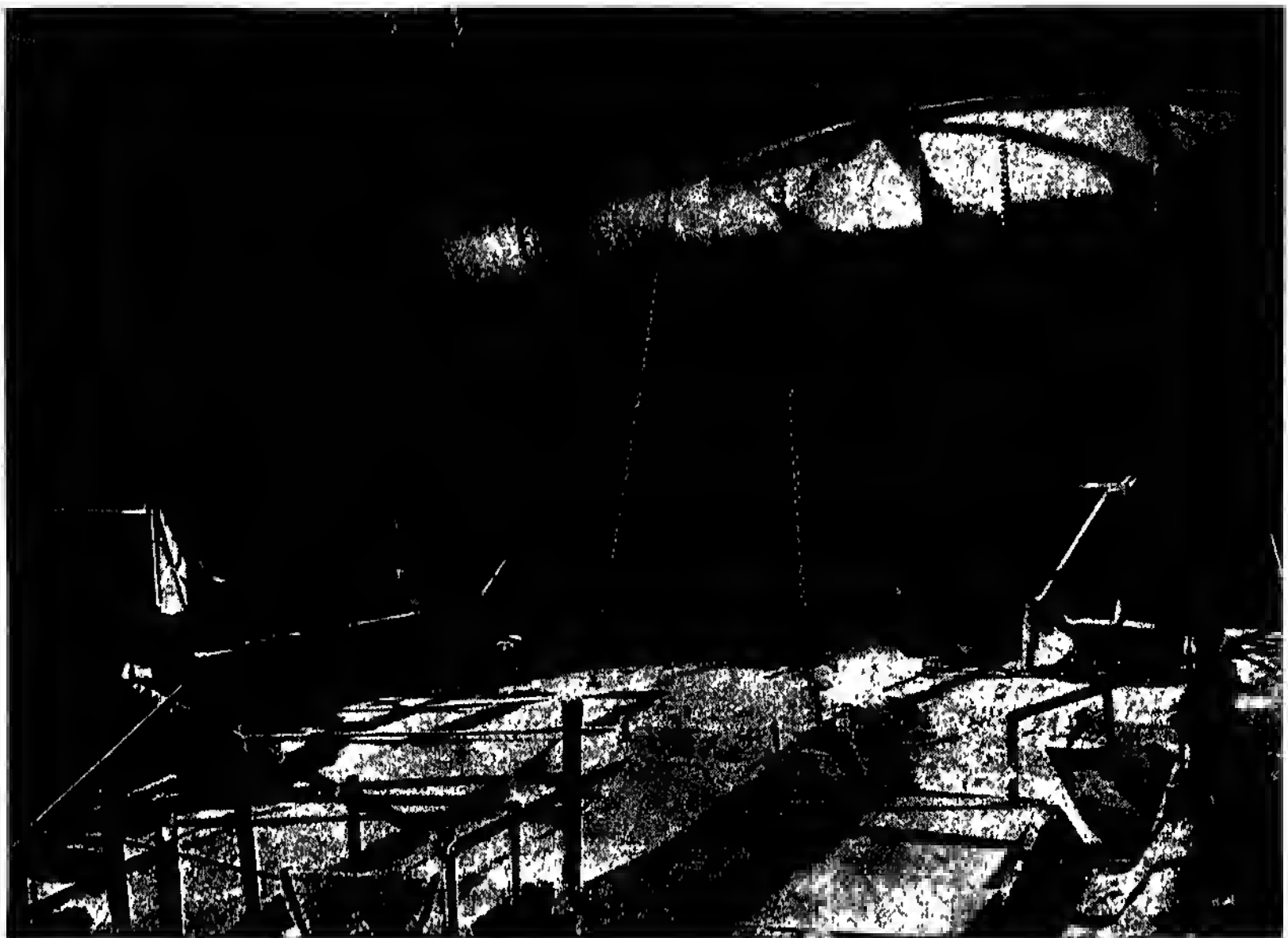
Here we see the top of one of the huge blast furnaces in which ore is melted and pig-iron produced. Pig-iron is really cast iron, and it received its name because, when it was run into trenches lying side by side, it was jokingly said to resemble a number of little pigs. The iron ore is pulled to the top of the furnace in great buckets, as shown in the picture. The blast furnaces are often 100 feet high and 120 feet round inside, and each one can produce 700 tons of pig-iron in a day. When the fire is started it is kept going for years, and if by accident it goes out and the molten iron inside becomes solid, the whole furnace has to be pulled down and rebuilt, at a great cost. Over 60,000,000 tons of pig-iron are produced in the world in a single year.

THE FIRE THAT MELTS IRON

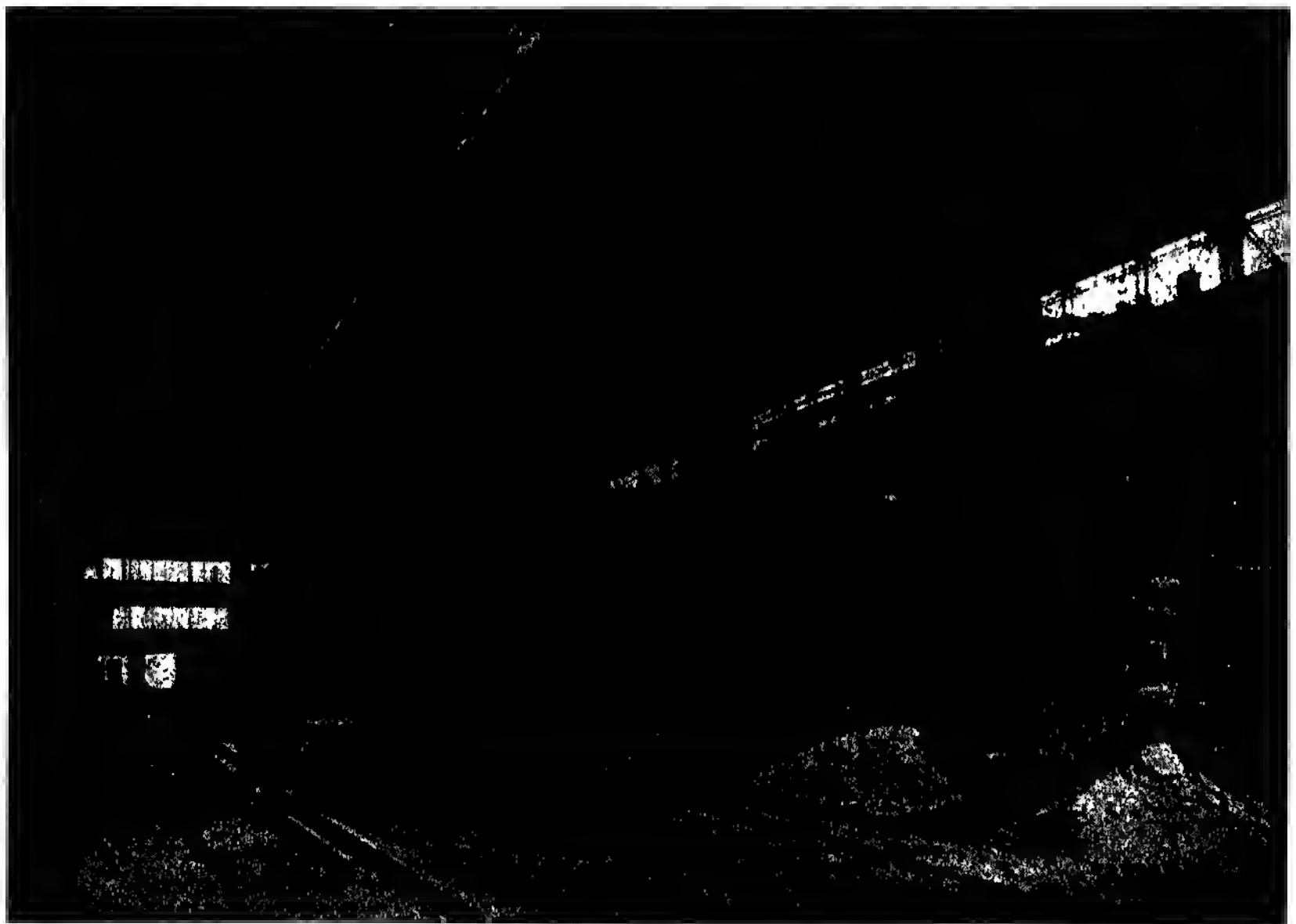


This diagram shows the beginning of iron and steel. The ore dug out of the earth is carried to the top of the great shaft, in which a huge fire is burning. The lid of the furnace is lowered, and the ore falls into the furnace. There it lies, in the greatest heat that men can produce by fire. The lid closes, and the gases rush into the pipe on the right and into the stove, where they help to drive machinery. This machinery, in turn, forces hot air into the bottom of the furnace through the little entrance that we see. This hot air rises through the heart of the fiery furnace, and the heat melts the iron out of the ore until it trickles like water. At the bottom of the furnace the melted iron collects, and every few hours the "tap hole" is opened and the white-hot iron runs into the groove along the ground, and from this into other grooves called "sand molds," because they are cut out in sand. Here these streams of iron lie still until they set hard and can be taken out as solid bars.

TWO INTERESTING PROCESSES



This picture shows the bottom of a blast furnace. The stream of iron is coming out of the bottom. The slag or impurities are on the top and are guided in one direction while the metal goes in the other. The melted iron goes to the endless-chain casting pig machine. When all the melted iron is tapped the hole at the bottom is plugged up with fire clay until enough is again melted down.



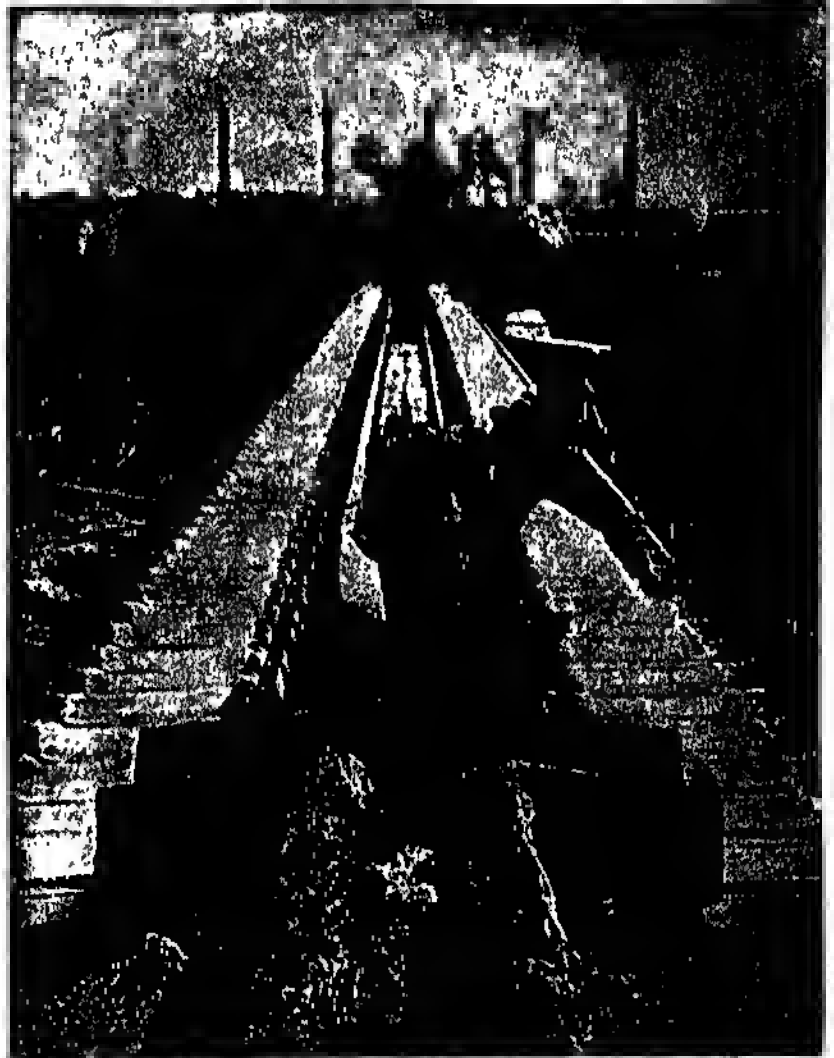
This picture is a little out of its order. It shows an open hearth furnace, which is described in the text and another picture of which is shown on page 5699. It is hard to understand how this furnace works unless one sees it in action. Steel made by this process is used for many different things.

Pictures by courtesy of the Illinois Steel Co.

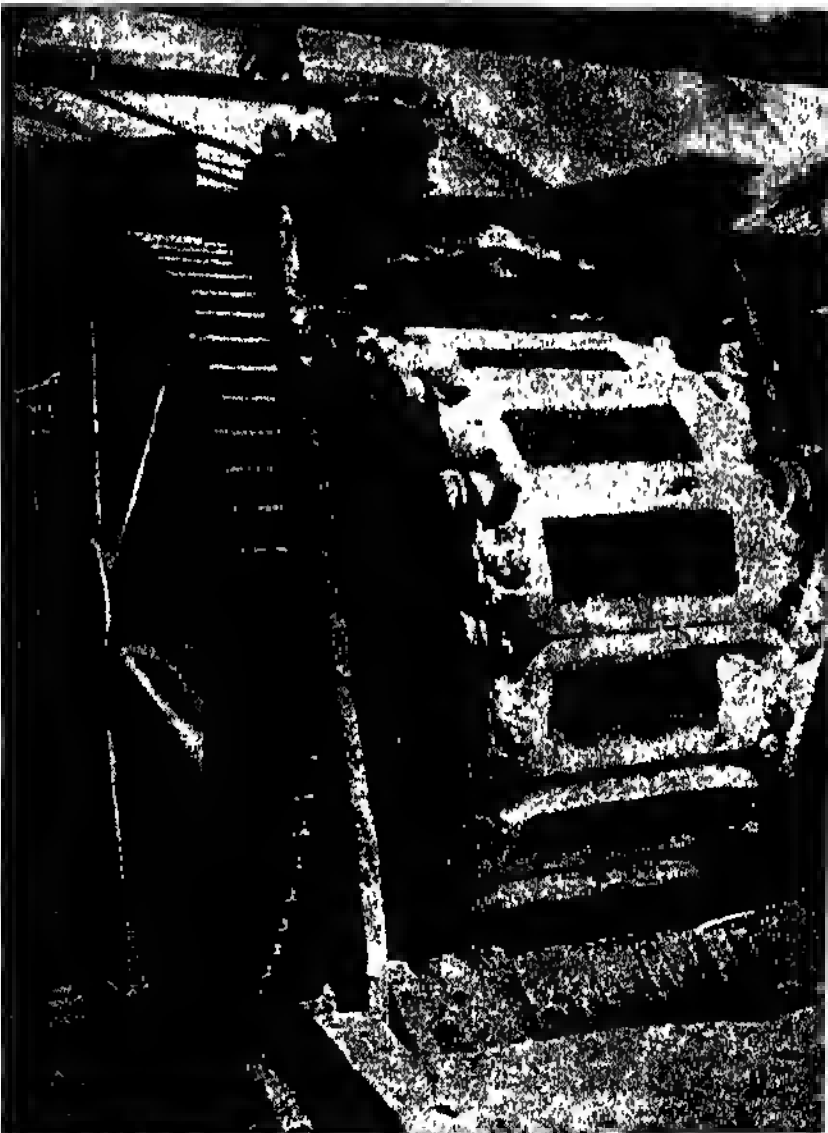
AN ENDLESS CHAIN OF WHITE-HOT IRON



Improvements in the manufacture of iron have been marvelous, and three blast furnaces at a single foundry now produce in one year as much pig-iron as was made by the world a century ago. In this picture molten pig-iron is being poured into molds from a ladle which received its fiery load direct from the furnace.



The most advanced ironworks make pig-iron in ingots, as shown in these pictures. Instead of being run into trenches, the molten metal is tapped into a great vessel called a ladle, as seen in the first picture, and from this it is poured into a series of molds in a double line. Sometimes the line of molds makes a circle.



The molds run upon endless chains, and as succeeding molds are filled the chain moves on. When the metal has cooled sufficiently, the chain of molds turns round a wheel, as shown in this picture, and the ingots fall into cars waiting to receive them. Although solid, they are still at a very high temperature.



As the hot ingots are loaded into the cars, cold water is sprayed upon them. In pig, or cast, iron about three parts of every hundred are carbon. Wrought iron has little carbon, and steel is between the two, having usually about one part of carbon in every hundred parts, although the different kinds vary.

20 TONS OF STEEL MADE IN 20 MINUTES



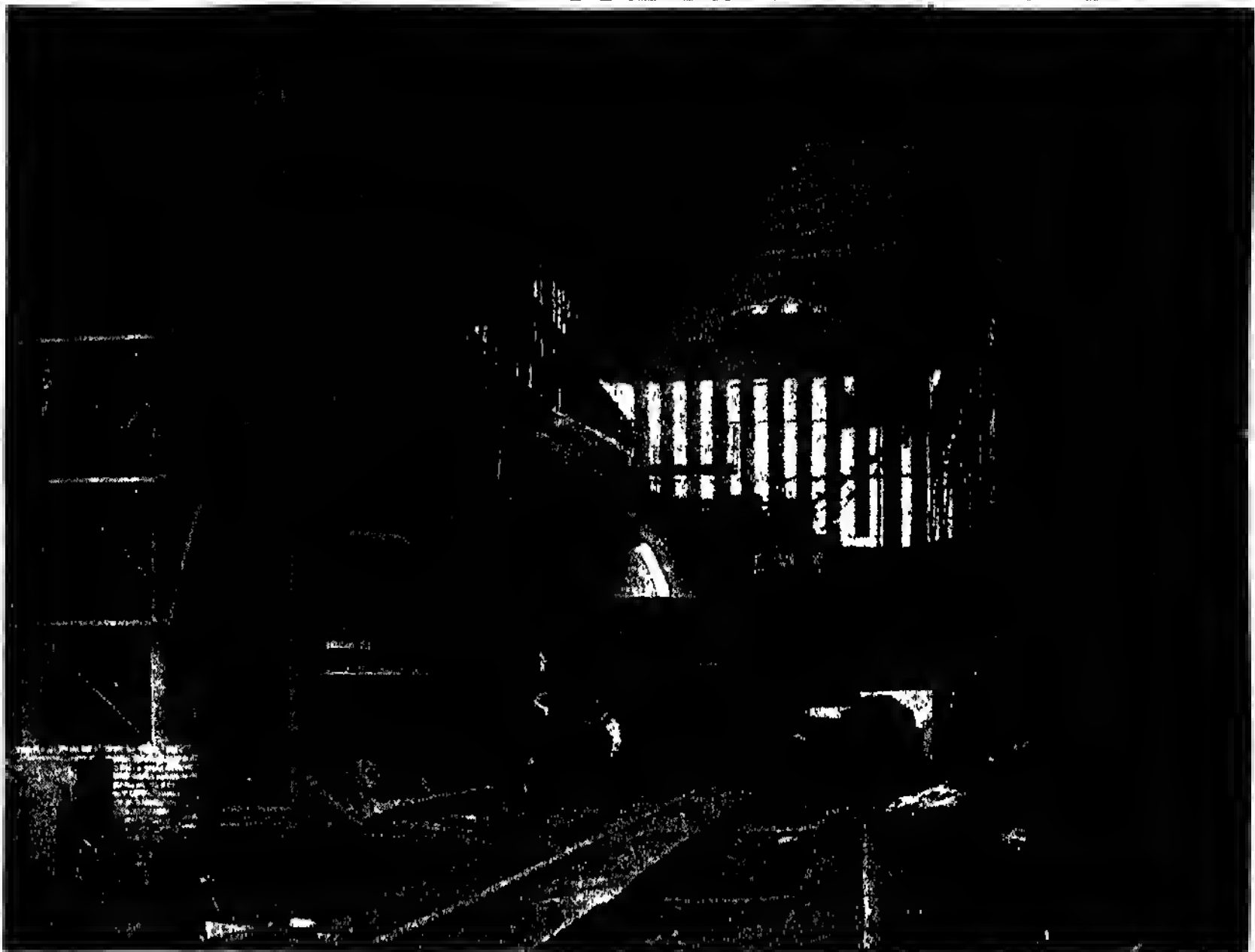
The first cheap and rapid process for making steel, a process by which much of the world's steel is still made, is known as the Bessemer process. It was invented by Sir Henry Bessemer, and greatly improved by David Mushet. Molten pig-iron is first of all poured into a vessel called a converter, as shown in this picture.



When the molten metal is in the converter, a blast of cold air is blown up through it in small jets. A roaring flame rushes from the mouth of the vessel, and is first of all violet, then orange, and then a dazzling white. Later, when the color becomes a faint blue, all the carbon has been burned up. Molten metal, containing the right proportion of carbon, is added, and the white-hot mass is at once converted into steel. The process takes less than twenty minutes, and a large Bessemer converter at a modern steel-works holds twenty tons.

Photographs copyright by H. C. White Co.

POURING OUT STEEL LIKE WATER



The converter works on trunnions, or pivots, and when the steel is ready, the converter is turned and the liquid metal is poured into a great ladle, as easily as milk is poured from a jug into a cup. In this picture we see the steel in process of being poured out. When the metal in the converter is at its greatest heat, the impurities in the iron, known as "slag," float at the top, and are often blown out during the blast as white-hot cinders.



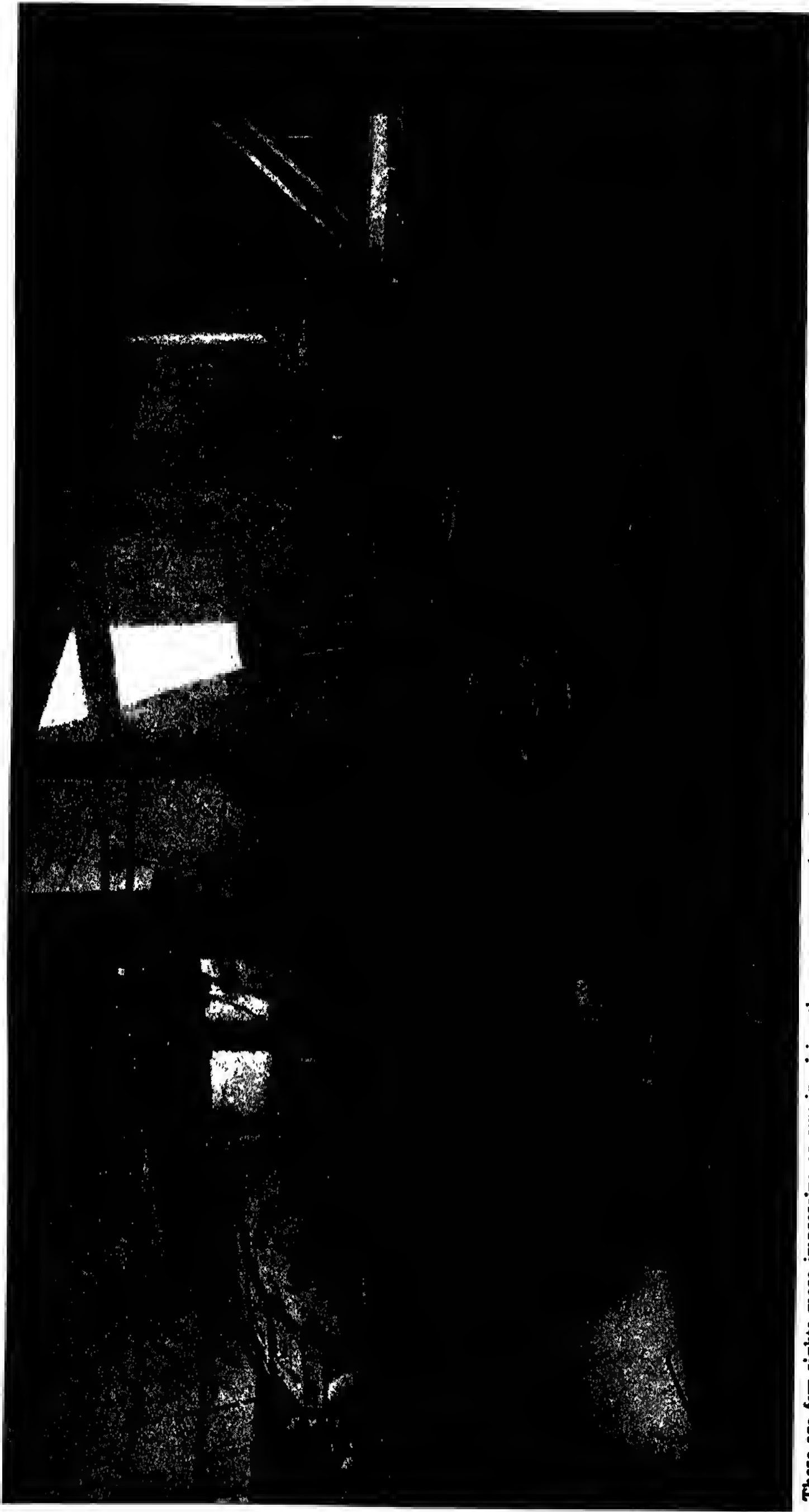
Another way of making steel is the open-hearth system, the first stages of which are shown on 5696. By this process, instead of burning up all the carbon in the iron and then adding the right quantity, as in the Bessemer process, only part is burned, and whatever is necessary is added. Here the steel is being tapped.



The huge ladle into which the molten steel has been poured, either from an open-hearth furnace or from a Bessemer converter, is then moved along by a great crane over a series of molds, and a plug-hole in the ladle is opened so that in turn each mold may fill. The great ladle in the picture holds more than seventy tons.

Copyright by H. C. White Co.

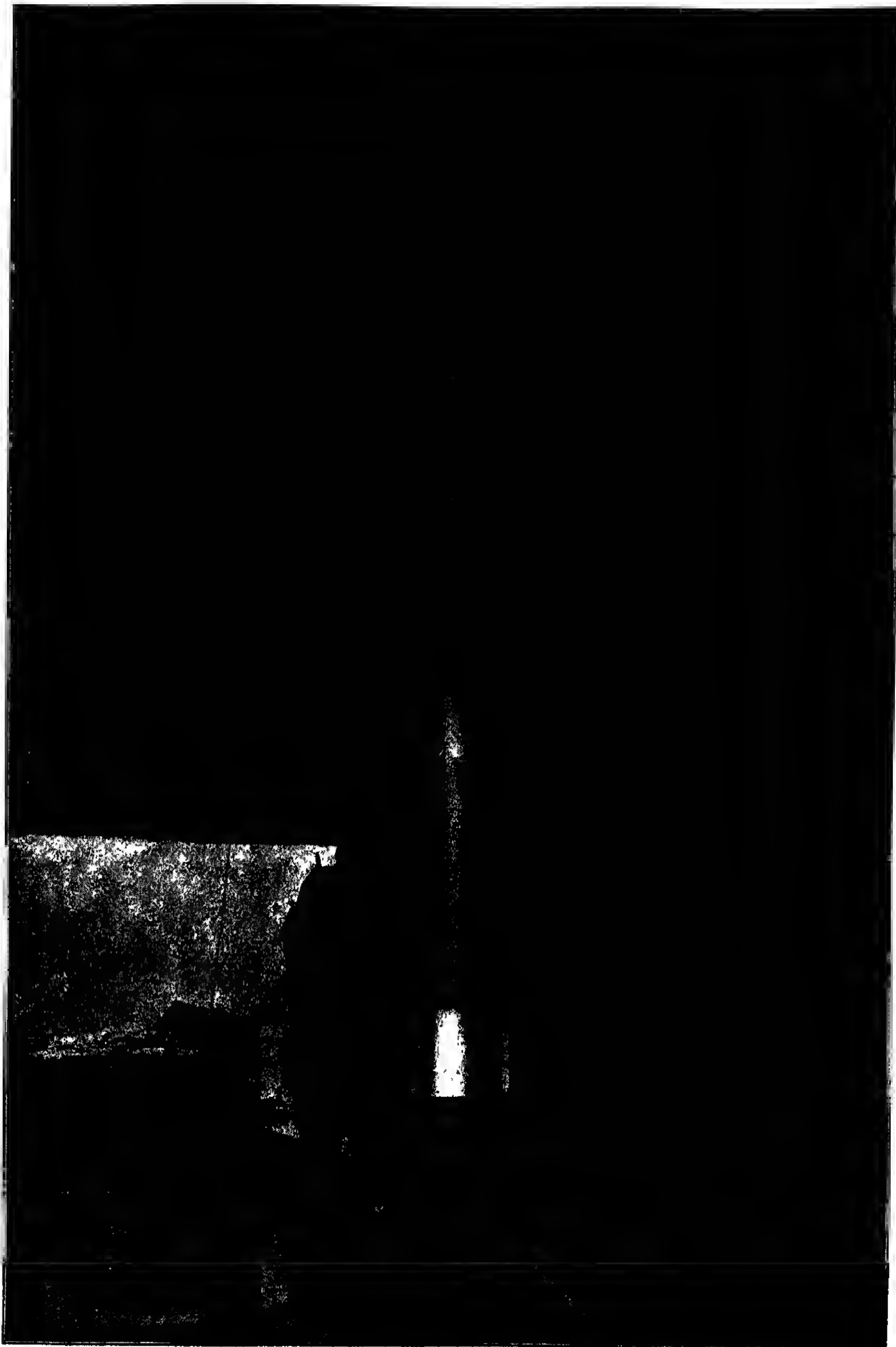
THE BLINDING GLORY OF MOLTEN STEEL



There are few sights more impressive or awe-inspiring than a great steel works when the blast is being blown through the Bessemer converters, or the fiery liquid is being poured out into ladles. It is in such a place and at such a time that one realizes the marvelous power and greatness of the mind of man, that can invent and carry out such tremendous processes. Here is liquid fire sufficient to destroy a city and slay ten thousand men if once it got loose, and yet, by sheer power of the human mind, it is under absolute control, and is handled as safely and with as little concern as the housewife handles milk. From this picture we get some idea of the wonder of molten metal.

Picture by courtesy of United States Steel Corporation.

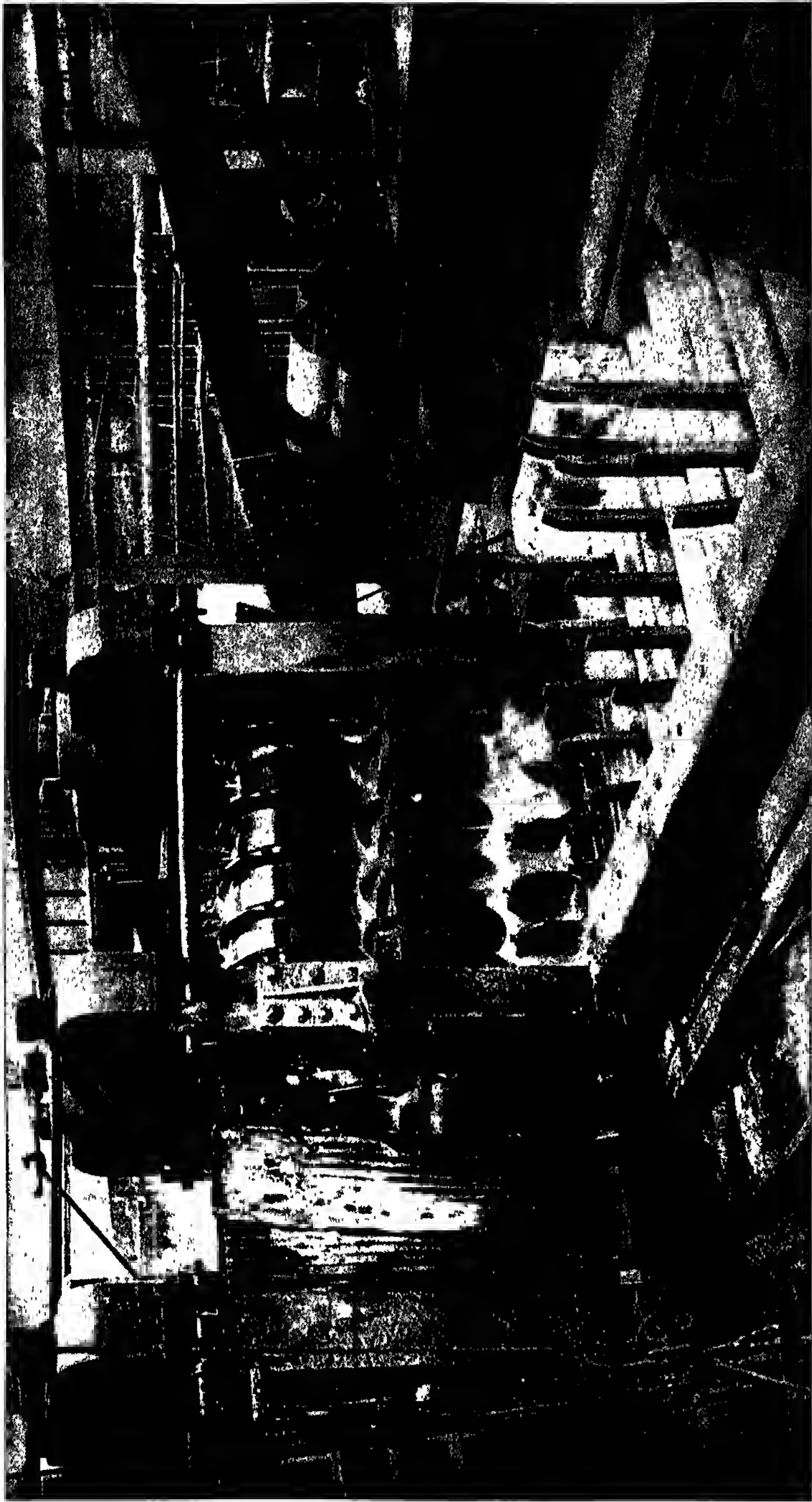
THE WONDERFUL TRAIN OF FIRE



When the steel from the ladle that was poured into moulds has sufficiently cooled, the moulds are removed, and the glowing ingots are taken by a train to the rolling-mills. The procession of fiery pillars presents an extraordinary and striking sight, especially if it be dark. Iron and steel have been truly called "kings of the earth," for our modern civilization is largely founded upon them, and were they removed, the whole fabric of modern life would crash. This is, without doubt, the age of steel.

By courtesy of the United States Steel Corporation.

THE FIRST STEP IN THE MANUFACTURE OF STEEL RAILS



This picture shows the beginning of the manufacture of steel rails from steel ingots. The great ingot which you see lying on the rollers, after being heated to exactly the right temperature, is forced between the first set of powerful rollers, which begin to reduce the size and increase the length. It comes out in the form of a beam, which then goes through another set of rollers. There are many rolling machines in the great mills, which turn out so much of the steel that is used. These quiet, smoothly running rolls have a power, which it is almost impossible to realize. They can crush almost anything, which is placed between them.

Picture by courtesy of the Illinois Steel Co.

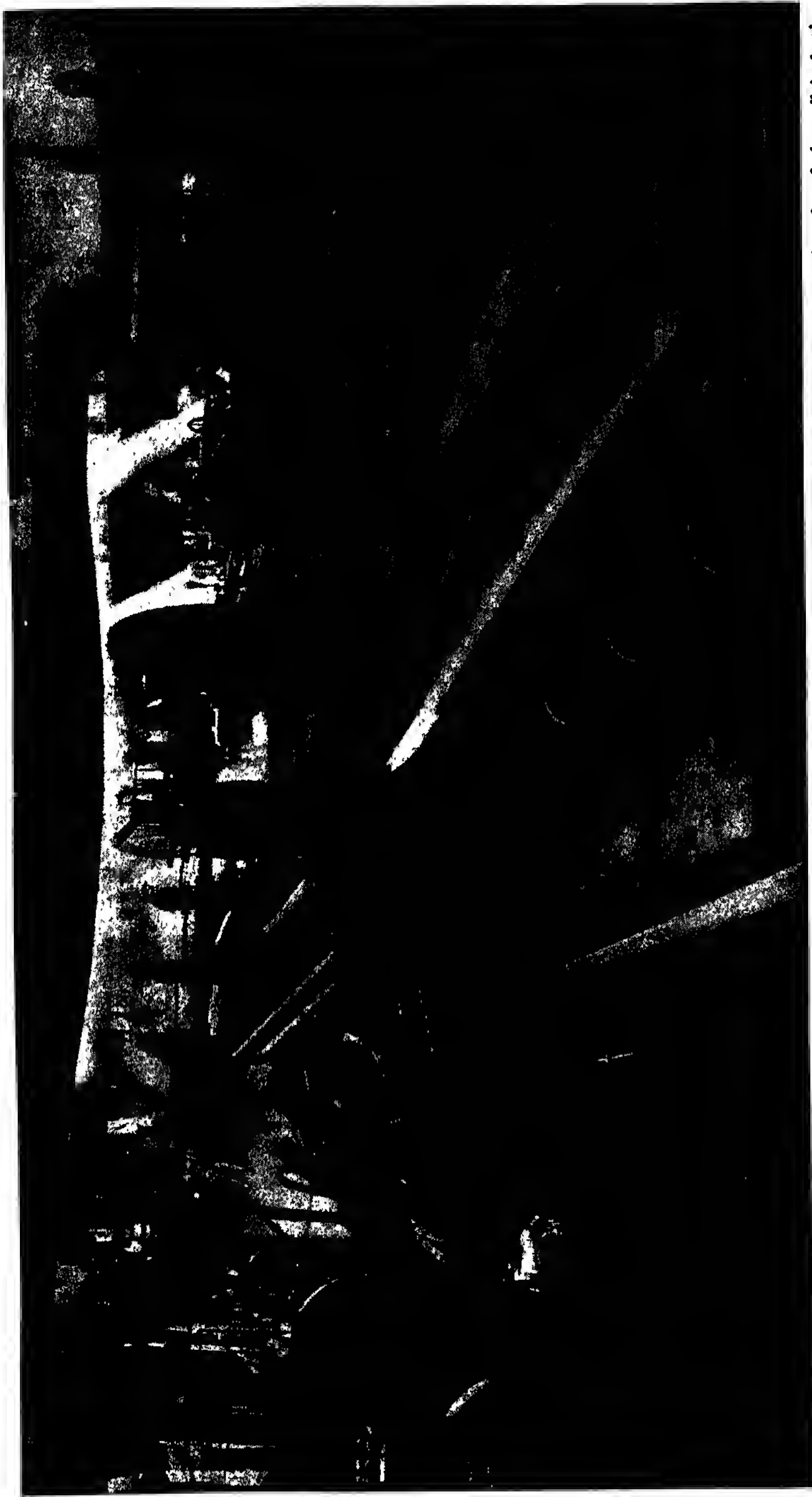
THE HEAVY INGOT HAS BECOME A BEAM OF STEEL



The beam which has gone through the first set of rolls shown on the preceding page now is being drawn out into rails or beams for railways bridges or for use in high buildings, which have a steel skeleton. The intensely hot steel in the grasp of these machines is pressed and drawn as if it were so much butter. The power of these rolls is so great that they can crush anything which comes between them. This is one of the most wonderful sights in a steel mill though some prefer to look at the great blast furnaces already shown.

Picture by courtesy of the Illinois Steel Co.

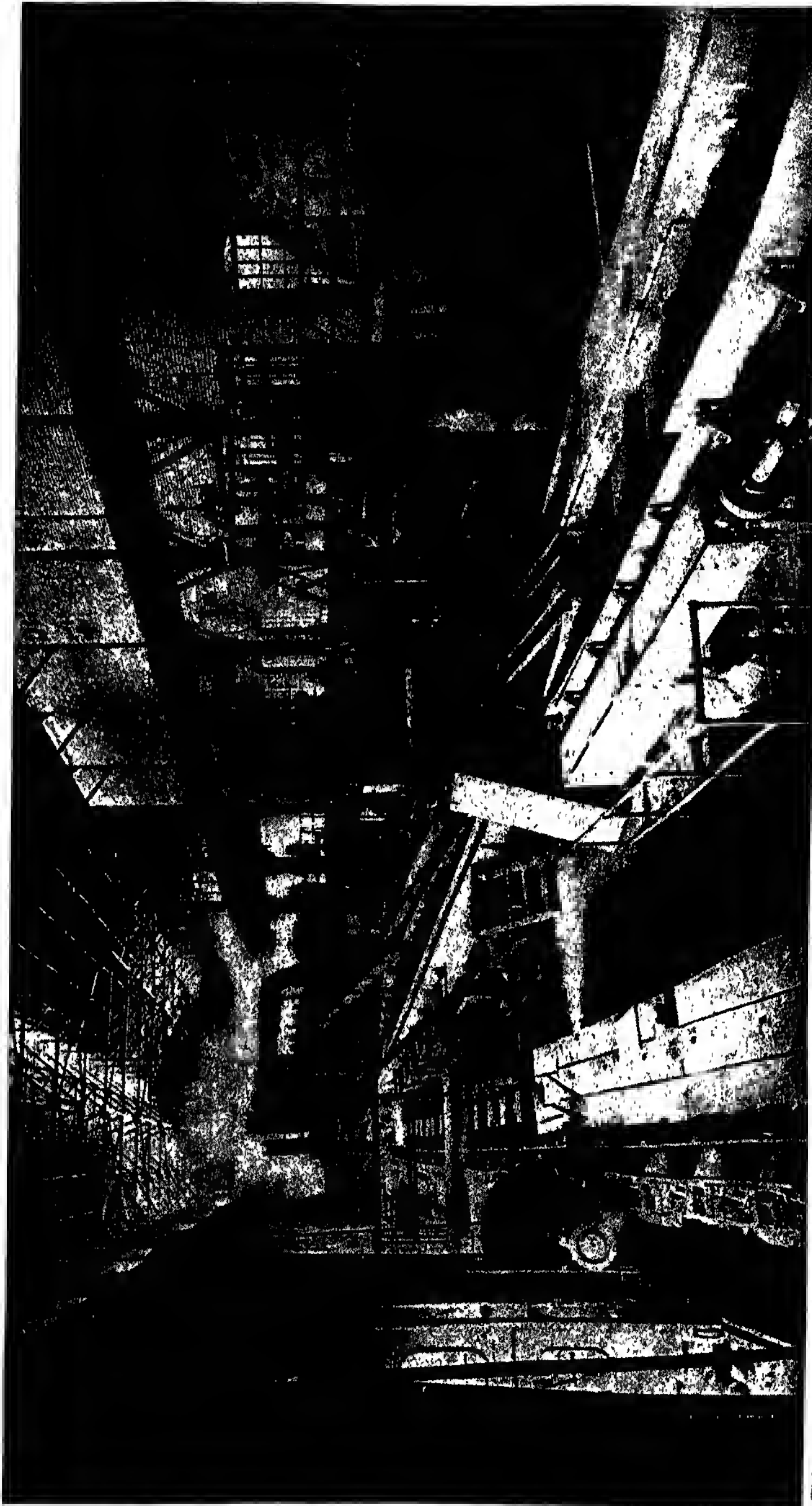
THE BEAM IS BECOMING A RAIL



Here we see a great room full of machines similar to that we saw on the preceding page. The process, which we saw begun, has been continued and the rail is beginning to take its final form. The machine does most of the work, and only the guiding brains of a few men are necessary in the large room. It has been only a little while since the labor of many men could not do at all what you see here being done easily and quickly by the mighty power of machines. Steel rails may be rolled in many different shapes as you can see if you look at a high building as it is going up.

Picture by courtesy of the Illinois Steel Co.

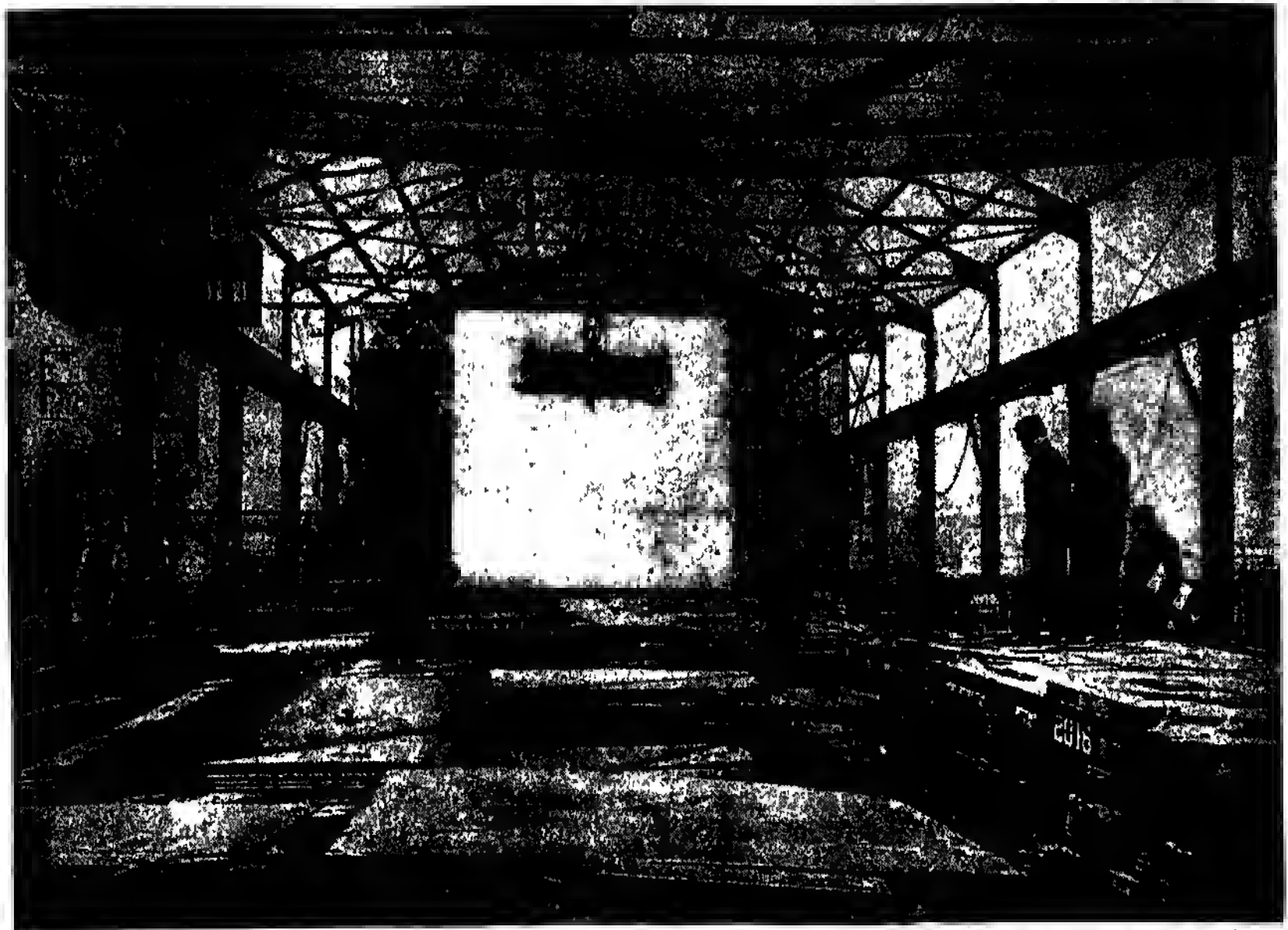
THE INTERIOR OF A GREAT STEEL MILL AT REST



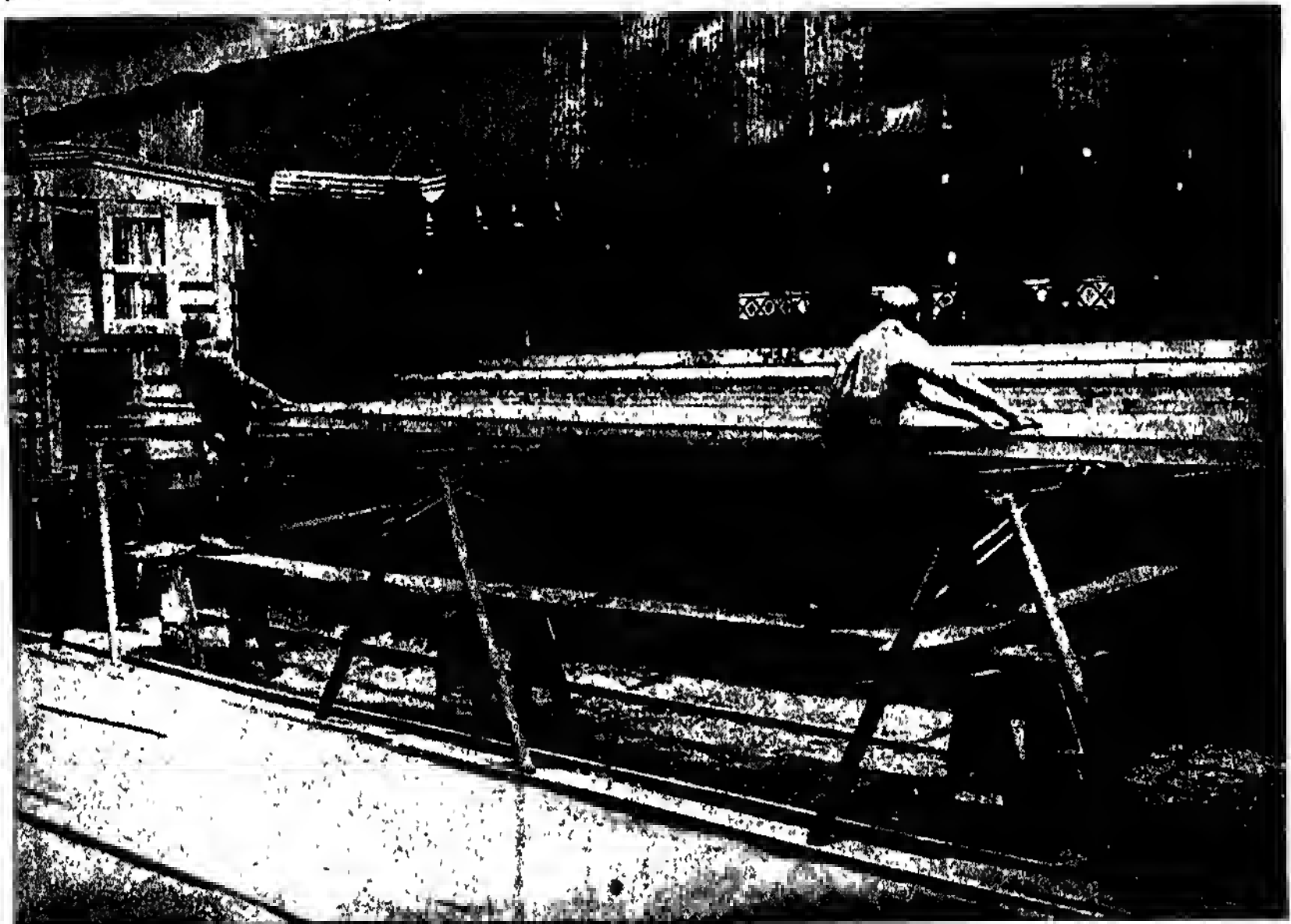
This is the interior of a great rail mill when no work of any sort is going on. It seems strangely different from the preceding pictures where we saw the whole mill filled with the blinding light of the white-hot metal, as the great rails and beams went from one set of powerful rolls to another, each set of which left them a little more like the finished product. No manufacturing of any sort is more interesting to see than a great steel mill, which some of you may have seen.

Picture by courtesy of the Illinois Steel Co.

THE FINISHED PRODUCT



One of the interesting devices to save labor is the magnet which moves the heavy steel plates with so much ease. The magnet lifts the plate, and then carries it to a point immediately above the car. The current is then cut off and the plate drops. Without the magnet, handling the plates would be difficult and tedious. On another page you can see other pictures of magnets at work.



Here we see men loading heavy steel rails into a car. It is interesting to wonder where these rails will finally be used. Perhaps it will be in our own country, perhaps in Canada, South America or even in China. American rails have been sold in nearly every country in the world, and often American locomotives run on them.

Pictures by courtesy of the Illinois Steel Co.



HOW REGULUS WENT BACK TO DIE

FOR many years the citizens of ancient Rome had been extending their domains, until in the year 270 B.C. they ruled over almost all Italy. The Romans then crossed over to Sicily, where they came into conflict with another race of brave and adventurous conquerors called Carthaginians.

A terrible struggle for the mastery now began. At first the Romans were victorious on land and sea. Elated with success, they decided to carry the war into Africa, and a large army, under Attilius Regulus, landed and swept all before them, until they came in sight of Carthage. Then, indeed, the prosperous Carthaginians roused themselves to defend their hearths and homes, and utterly vanquished the Romans. Regulus and a host of Romans were led captive into Carthage.

The war, however, went on until after five years the losses of both sides were so great that the Carthaginians hoped that peace could be made. They summoned Regulus, the captive general, before them, and said:

"We are weary of the war, and are sending an embassy to try to arrange a peace and an exchange of prisoners with your senators at Rome. Go you to Rome and prevail on them to agree. But first give us your word as a Roman that, if you fail, you will return to captivity here."

When the embassy reached the gates of Rome, Regulus stood still and cried:

"No longer am I either a citizen

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or a senator of this great city; neither will I enter within her walls, nor will I take my seat in her noble Senate."

On learning of this resolve, the Senate sent certain of their number to persuade Regulus to come into Rome. In the Senate he refused to give his opinions until commanded. Then the undaunted Regulus spoke out courageously:

"To no purpose is it to ransom prisoners who have ignobly yielded while they still bore weapons in their hands; let them be left to perish; let war with Carthage go on till Carthage be conquered."

His counsel prevailed, and the unsuccessful embassy returned home. With them, true to his word of honor, went back the bold, resolute patriot, though he knew that he would receive little mercy at the hands of his captors, whose hopes of peace and prosperity he had so stubbornly overthrown.

Tiber's banks were crowded with his fellow-countrymen as he embarked on the ship that was to bear him across the sea. It was the most glorious moment of his life as he stood on the ship bidding farewell for ever to those Roman senators, to whose wavering courage he had given fresh life.

And so Regulus entered Carthage once more, and his counsel was repeated to the cruel Carthaginians. They had not enough nobility of spirit to reverence a brave patriot, but instead devised horrible tortures and put him to a most cruel death.

OUT OF THE DEPTHS OF THE EARTH

"FIRE! Fire!" the dread word sounded and gathered volume. Smoke, first in little jets and then in belching masses, spurted and burst out from sheds and engine-houses at the shaft of a great lead mine in Missouri. Fanned by a strong wind the flames gained in fury, and as the timber-curbing in the shaft caught and burned, hot embers fell into the shaft, and heat and smoke descended. The pump was the next to go, and as that stopped working, men looked at one another with drawn faces, for there were two men in the mine. In the sump at the foot of the shaft the water would be filling up—seventy-five, one hundred gallons a minute. The precious air would so soon be exhausted.

"To the drill-hole!" shouted the foreman, and a score of willing helpers rushed to pump air in through a six-inch vent. They met with little success, and the air that issued from the hole was so hot as nearly to scorch the faces of the men who stood over it. For a while they could hear the imprisoned miners near the opening, then the sounds ceased. Men no longer looked at one another's faces, and women fainted.

"I'm going down," said Chew, the stationary engineer. A wet apron was tied over his mouth and nose, and he was lowered into the shaft by means of a rope and a windlass. Forty feet down the air was so hot that he was nearly overcome. He was drawn to the surface, and lay there, limp, gasping, and inert.

"Put the rope on, men," said one of the miners. "We can't let those chaps go!"

He, in turn, was lowered through blinding smoke and scalding steam until he reached the floor of the mine, a hundred feet down. Chew, by this time, had recovered, and insisted on going down the shaft a second time. They soaked the apron again and bound it over his mouth and nose. Once more the rope was secured and he swung clear and began to drop. He reached the foot, and joined the miner who had gone down before him.

Which way to go? The workings stretched in every direction away from the shaft, and they could only count on a few moments' strength and safety. They chose the path that led most directly to the vent-hole, since it was

there that the men had last been heard. Choked at every breath by acrid smoke, they staggered along, finding their way by feeling the rough sides of the workings with their hands.

Suddenly, Chew gave a muffled cry and seized his companion's arm, pointing ahead. They darted forward and they reached a figure, huddled against the wall and bending over a black prone mass. The miners were found! One was completely unconscious, and the other dazed, blinded, and almost helpless. There was not a minute to lose. With the unconscious man between them, Chew and his companion returned to the shaft, and gave the signal to make ready to hoist. Then they secured the rope about the helpless body, and only waited to see it lifted before starting back to the other prisoner. Ten feet, twenty feet, and the miner fell down, violently sick.

"Go on," he gasped, "I'm done!"

Chew had now two men on his hands, and knew that his own resistance was nearly at an end. As rapidly as possible, he assisted the miner back to the shaft and sent him to the surface, then for the third time turned back, groping through the blinding pall back to the niche in the wall. The other man was still alive and able with some assistance to walk, and after what seemed hours they reached the bottom of the shaft.

Would the knots ever tie? How hot the rope had become! There was no room in Chew's mind now for any thought but his anxiety lest he should forget the signal to hoist. At last everything was taut, and the burden lifted. It disappeared and he waited, and nothing came. Hours passed—it seemed to the suffocating man who could hear nothing but the sledge-hammers in his temples. What had become of the rope?

"Hurry, men, hurry!" he shouted, and something swung against his face. It was the rope, and with slow and bungling fingers that worked in unwilling obedience to the obsession in his brain he bound himself and jerked the rope. He knew no more until he awoke hours later in his own bed.

"The—others?" he said haltingly.

"All safe," smiled his wife, with eyes that seemed to Chew to have felt the smoke too, so was their clearness dimmed.

A BLUEBERRYING PARTY

"MOTHER, the blueberries are ripe; mayn't we take our cans up on the hill? Do let us, ple-e-e-ase!" The chorus came from the two little Parkers, who were spending the summer months in the country that year with mother and their governess.

"Why, yes," said Mrs. Parker, "if you like. Shall we ask Jack and Susy Miller to come too? Since Mrs. Miller has been ill they have had a hard time, and it would be a treat for them."

Jim looked at Maisie and Maisie looked at Jim. They did not care very much for the Millers, who were such solemn children, occupied for the most part in feeding chickens or catching horses or drawing water.

"All right," they agreed dully. Mrs. Parker smiled to herself, but she wanted Jim and Maisie to enjoy their holidays, and so she added:

"Let's take our supper: we can have it in Farmer Miller's old shack in the hill pasture. You shall pick all the blueberries that you can carry, and Miss Pierce and I will have supper ready for you by the time you have finished."

There was no hesitation now in the children's agreement. They ran off to invite Jack and Susy, and to bother everyone about the farm for the best cans.

It was lovely on the hill that afternoon. The children thought so as they picked the ripe fruit, or lay down amid the song of the bees and felt the wind play over their faces. Mrs. Parker thought so too as she and Miss Pierce sat in a cool corner in the old shack, through whose holes the air came so freely. At supper even the Miller children forgot to be solemn, and Jim choked twice in his milk. At last, "Come," said Miss Pierce, "help me to pack the baskets. Mother wants to start down the hill in time to see the sunset."

As their little party emerged from the shack, Mrs. Parker, who was walking first, cried out quickly, "Get back and shut the door—the bull is loose!" Farmer Miller's great red bull that lived in the barn had got off his chain and was charging down upon the shack.

They shut the door not a minute too soon: the great creature with lowered head butted heavily against it, snorting and bellowing angrily, and pawing the

ground. Maisie began to cry, but Susy put her arms round her, and the boys ran from hole to hole in the wall, excitedly reporting on the animal's movements.

"It has gone to the front now," called Jack.

A crash bore witness to the fact as the bull put his head through the window. Meanwhile, Mrs. Parker and Miss Pierce were deep in whispered consultation: together they examined the holes in the walls of the shack and tested the light doors.

Then Miss Pierce called the children to the front, and Mrs. Parker slipped out and went round the shack, hoping to entice the bull to the rear while the others escaped. When the bull saw her, he lowered his head and she had to run back to the door whence she had emerged. Just as he charged she shut the door and threw her weight against it, trying to hold it; but the bull forced it partly open and thrust its wicked head through the opening.

Mrs. Parker had a broken shovel with a handle two feet long in her hand, and with it she struck the bull on the head again and again, still holding the door with one foot. She was not defeating it, nor even seriously hurting it—so thick was its skull—but she was engaging its attention and gaining time while the others escaped. Over its lowered head the brave woman could see that Miss Pierce had reached the high fence bounding the pasture and had already got Maisie over, while the boys were climbing by themselves.

A few more blows, and then, as she saw the last of the children and Miss Pierce on the top of the fence, she darted back into the building. Thankful for the holes in its walls which before had so alarmed her, she climbed quickly through one, tearing her dress and bruising her shoulders as she went.

The bull, which had become more enraged in its fight with Mrs. Parker, became confused in the shack, and did not follow her. Breathless, she reached and scaled the fence and dropped—laughing and crying at once—into the children's arms.

"Let's never go blueberrying again," said Jack.

THE NEXT GOLDEN DEEDS ARE ON PAGE 5949.

ORANGE GROVE AND MOUNTAIN PEAK



Southern California offers many charming views, but few are more wonderful than this glimpse of a snow-covered mountain and a fertile plain, framed by an orange branch. It was made near Los Angeles, one of the most attractive cities in the whole country. There are many orange, lemon and olive groves in this region, and the mountains contain many valuable minerals. The growth of the city has been phenomenal, but factories have not been allowed to spoil the appearance of the city.

Photograph by Putnam & Valentine.

The Book of THE UNITED STATES



A View of a Stock Farm in Colorado.

THE STORY OF THE WEST

WHAT is the West? This question is difficult to answer, for it has meant different things at different times, and now means different things in different places. The people who live near the Atlantic sometimes speak of Chicago, St. Louis, or Omaha as West; but to the people who live in Nevada or one of the Dakotas, these cities belong to the East. No one can say where the real West begins.

Since much more than half of the people live east of the Mississippi River we shall call the West the country beyond that great stream. It was not a part of the United States in the beginning, but came after the Constitution was adopted. Some was gained by purchase, some by conquest, and some by discovery and exploration. We have told you of the Louisiana Purchase, the annexation of Texas, the Mexican Cession, and the Oregon Agreement in other parts of our book, and shall not repeat it here.

WHERE DID THE PEOPLE OF THE WEST COME FROM?

When these great additions to the territory of the United States came, few white men lived in the vast region, and the most of them were Spanish or

CONTINUED FROM 5600

French. Soon Americans from the East crossed the Mississippi in great numbers and the region began to be made into states. Louisiana was the first state made, but we usually call it a Southern state. The territory is so great that it was not until 1912 that the last bit was made into the state of Arizona.

When the Census Office in Washington is counting the people, it divides the states beyond the Mississippi into four groups. The West North Central, the West South Central, the Mountain and the Pacific states. We usually speak of the West South Central states as Southern states, though sometimes they are called the Southwest, but this name is also used sometimes in speaking of Arizona and New Mexico.

More than two-thirds of the land in the United States is beyond the Mississippi, but it does not yet contain one-third of the population. The population of the Mountain States and the Pacific States increased very rapidly between 1900 and 1910, and has grown even faster since.

THE MIDDLE WEST AND THE FAR WEST

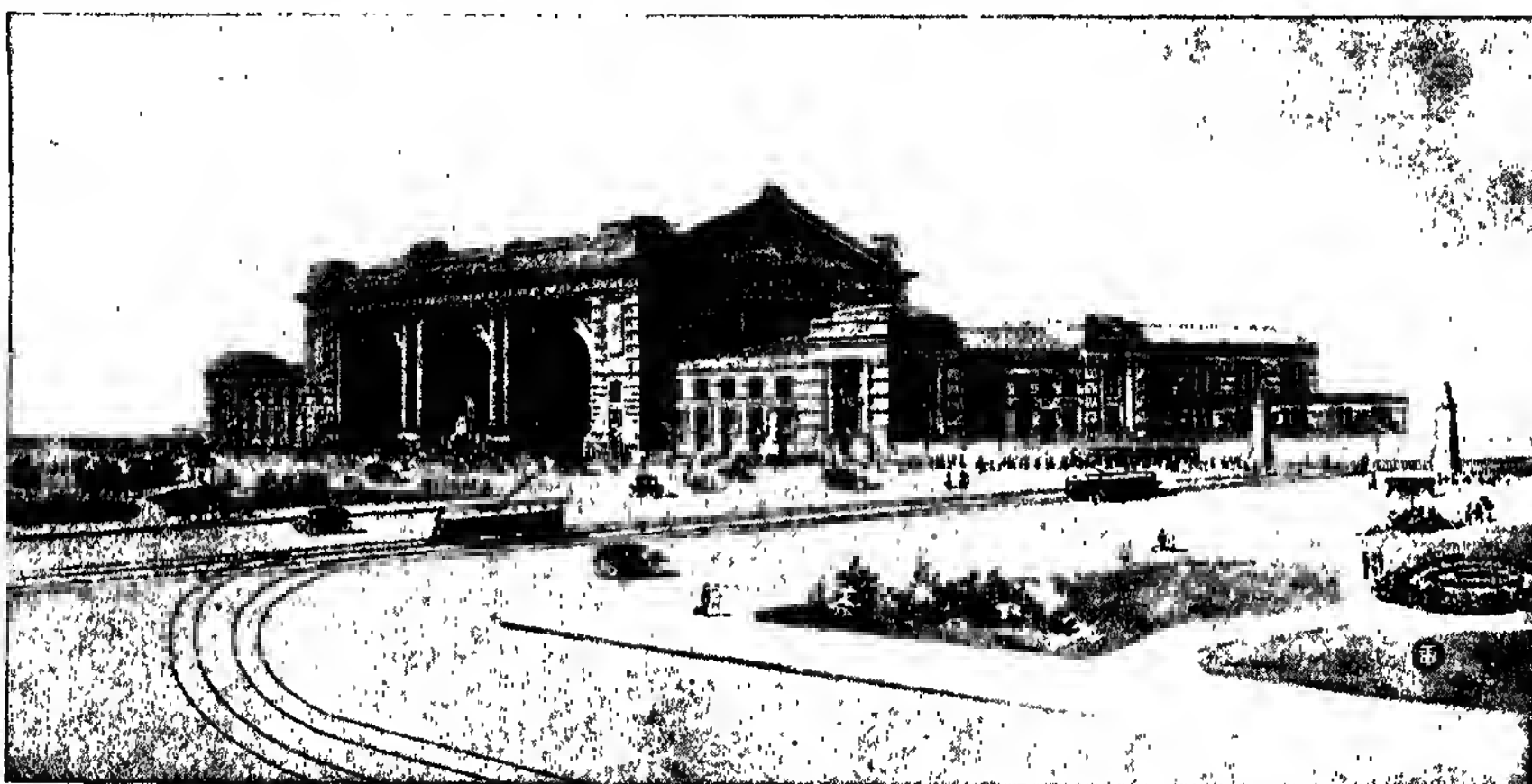
Some of the states near the Mississippi have been settled a long time and

have large cities, and many factories. Some are beginning to be quite old states, and are sometimes called the Middle West. The Mountain and the Pacific states are younger, except California and Oregon. Population first went to California because of the discovery of gold, and to Oregon because of the furs. For a time these were states, while between them and the other states along the Mississippi were wide stretches of land over which the buffalo and the Indian roamed, and in which there were few white people. All of it has now been made into states.

Probably many of you think of the West as being full of cowboys and

falls. In some parts the air is cool and bracing, in others warm and humid. Forest giants seem almost to touch the sky in some parts, while in others you might travel many miles without seeing a tree.

There is some of the most wonderful natural scenery in the world. We have shown you some of the mountain peaks, the Big Trees of California, a few of the wonders of the Yellowstone, and the course of the Colorado River, which has cut its bed deep down into the earth. Everything seems to be on a large scale. Trees, mountains, lakes and plains, all are immense.



The immense Union Station at Kansas City, Missouri, into which all the trains run, is sometimes called "The Gateway of the West." It was finally completed in 1914, and is now the third largest in the United States.

By courtesy of the Teachnor and Bartberger Engraving Company.

painted Indians, who spend most of their time on horseback, riding recklessly over the hills and plains. There are some Indians, to be sure, but most of them wear ordinary clothes and send their children to school. The cowboy has not disappeared entirely, but he is going too. The great ranches are being cut up into farms, or else sheep are replacing the cattle. Cowboys would be out of place on a sheep ranch.

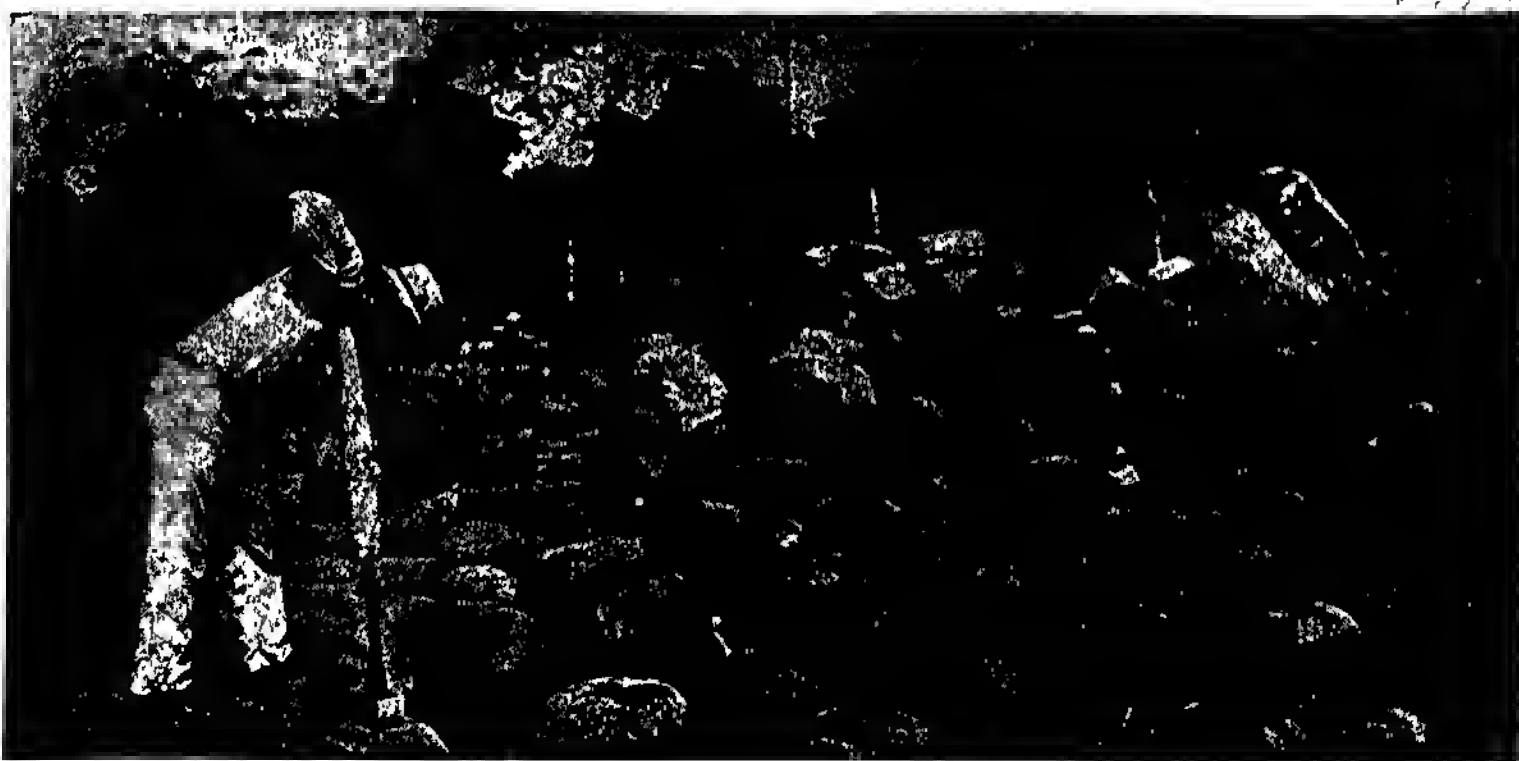
THE RICHES OF THE MOUNTAIN AND THE PACIFIC STATES

We are particularly interested now in the Mountain and the Pacific states, eleven in all. They include many varieties of surface, soil and climate. In some of them are high mountains, on the top of which the snow never melts. There are real deserts in which rain seldom

Perhaps all this bigness has affected the nature of the people, for Western people are different. Nothing seems to hold them back when they decide that something should be done. The greater the task, the more determined they are to accomplish it. Some of our pictures will show you the kind of things they have done. A small Western town will decide that it must do something, and while an Eastern town would be discussing the matter, the Western town, no larger in population, would have gone ahead and finished.

THE WESTERN CITIES PREPARE FOR THE FUTURE

Most of our Eastern cities grew slowly in the beginning, and the people did not expect them to grow very large, if they thought about the matter at all. If you



MARKING RUBBER ON A RUBBER PLANTATION IN BOLIVIA, SOUTH AMERICA

RIDING ON WHEELS OF AIR

THE STORY OF A BEETLE AND A RUBBER TUBE

WHAT is this little tube of air, by means of which we visit places where there are no railways, as easily as if Ariel had given us his wings? Where does it come from—this wonderful substance which enables us to have telegraph cables under the sea, and walk dry shod through mire and snow?

It is simply a resinous, milky substance contained in rubber plants and trees. These trees live in hot, damp, tropical forests where there are swarms of wood-boring beetles. As soon as a beetle thrusts its boring weapon into the bark, the tree pours forth a poisonous sticky juice. It kills the insect, and at the same time fills up the wound which has been caused. When the tree is blown to and fro by the wind, the substance does not drop out, because the juice as it dries is elastic, and no matter how the tree sways, it still holds itself in place. Now the first to discover that rubber might be useful to man was not a wise, educated chemist, but some brown-skinned naked native of the South American tropics. One day cutting into the bark of a forest tree by

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accident or design with his stone hatchet, he saw the thick white milk

running in from the wound, watched it grow firmer in the sun, and found that it hardened

to a spongy substance. He discovered that it was liquid proof, and applied it to wounds, coating the sore spot with the fresh milk. Columbus found the Haitians playing with balls made of this substance when he went forth on his second voyage. And a traveler, named Torquemada, noticed, four hundred years ago, that the Mexican Indians used the same substance for making their cloaks waterproof.

But neither the Spanish conquerors of Central and South America nor the Portuguese conquerors of Brazil had for three centuries any inkling of how much this wonderful substance would mean to men. Towards the end of the eighteenth century, somebody discovered that it would remove pencil marks from paper, and people in Europe wanted it. When it was introduced into England about 1820, seventy-five cents was charged for a piece half an inch long. Artists used it and were

walk about most Eastern cities you will find the older parts with narrow streets, and few open spaces. This is not true of the New England villages, of course, but these wide streets were not left for travel alone.

Every Western city expects to be as large as Chicago, or New York, some day. Therefore it makes its streets broad, and leaves open spaces. Plenty of park space is reserved before it has been covered with houses, and becomes so valuable that the cost will be too great. Some of the cities of the Far West have wonderful systems of parks, and playgrounds for the children. What would not many Eastern cities give to have broad streets? Boston has spent millions of dollars widening the streets in the business section, and still they are too narrow.

Another reason for the open minds of the Westerners is that they have come from every part of the United States. New Englanders, New Yorkers, Southerners went to the West to live. They worked together and talked together, and each found that the other had something to give him. They found that they did not think alike about a great many questions, and this made all of them wonder whether their own ideas were the only right ones. Perhaps there was truth in what the other men thought? So the Westerner decided that every man had the right to think what he chose, if he did right. We say that the West is tolerant, and this is what the word means.

WHAT THE WESTERNERS BELIEVE ABOUT WORK

The Westerner believes that every man ought to work. He does not think that a man should be idle, even if he has wealth enough to buy what he needs, but he does not think that a man ought to work all the time for himself. He ought to work a part of the time for his town, his county or his state. Busy men give much valuable time to help make their towns better, and to make them better known.

The states of the Far West grow most of the things that are produced further east. They do not grow so much wheat and corn, but they do grow a great deal. They are beginning to grow cotton, too. In some parts of the West there is too little rain to grow good crops. The

people themselves, and the United States government, too, have built great dams across some of the streams from the mountains and save the water for a time of need. They have many cattle, and most of the sheep in the United States are in these states. Every one of these states has many sheep, and some of them have millions. Thousands are found on some of the great ranches. Did you know that ostriches flourish in the warmer states of the West?

THE DELICIOUS FRUIT WHICH IS GROWN IN THE WEST

The fruits of this region add much to our happiness and health, for one is not likely to be healthy unless one eats fruit. California grows oranges, lemons, olives, figs, apricots, prunes, pears, peaches, cherries, strawberries, almost every kind of fruit, in fact, but Oregon declares that it can produce better strawberries and apples. Washington declares that its apples are the best. The beautiful apples, so carefully packed, that you see in the fruit store came from one or the other of the Pacific states.

The mountains of the section are nature's storehouse. In every state are rich mines. There is much coal, and there are whole mountains of copper. You have been told that most of the gold and silver of the United States proper comes from these states, and there are many other metals, too. Some of them you may have never seen, but they are very valuable. Such things as tungsten, platinum (which is more valuable than gold), antimony, molybdenum and many others come from these states. There are gem stones, too.

There is much petroleum. California has not much coal, and so it burns oil instead to run its factories; or else harnesses some of the swift streams and forces them to make electricity, which is carried over wires perhaps a hundred miles or more, there to turn the wheels of a factory, or to light a town.

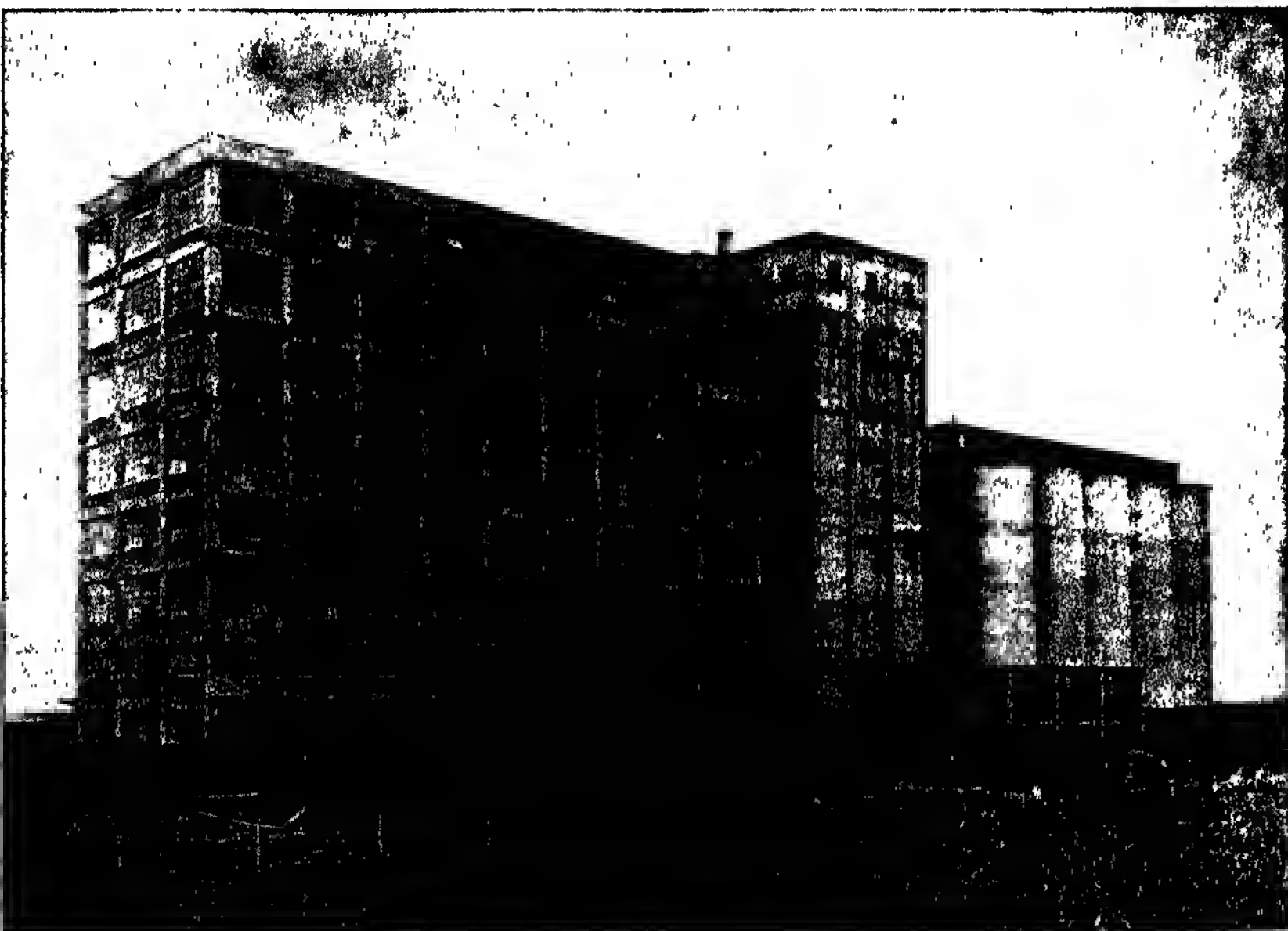
These are some of the things which are making the West rich and prosperous. We have not had space to tell of the great colleges and universities which are growing up there; we have said little of the factories; we have not said anything of the immense shipyards, where great ships are built. But we cannot tell you of all the wonders of this section.

THE NEXT STORY OF THE UNITED STATES IS ON PAGE 5825.

TWO SIGHTS OF THE GREAT MIDDLE WEST



The population of Oklahoma was large before it was admitted to the Union, and has continued to grow rapidly. Though it was admitted as a state only in 1907, it was the twenty-third state in population in 1910, and its rank is higher now. This is the magnificent state capitol building at Oklahoma City. The state now ranks well at the top in the production of petroleum, and has many mines of considerable value, besides much very fertile land, which yields large crops of various agricultural products.



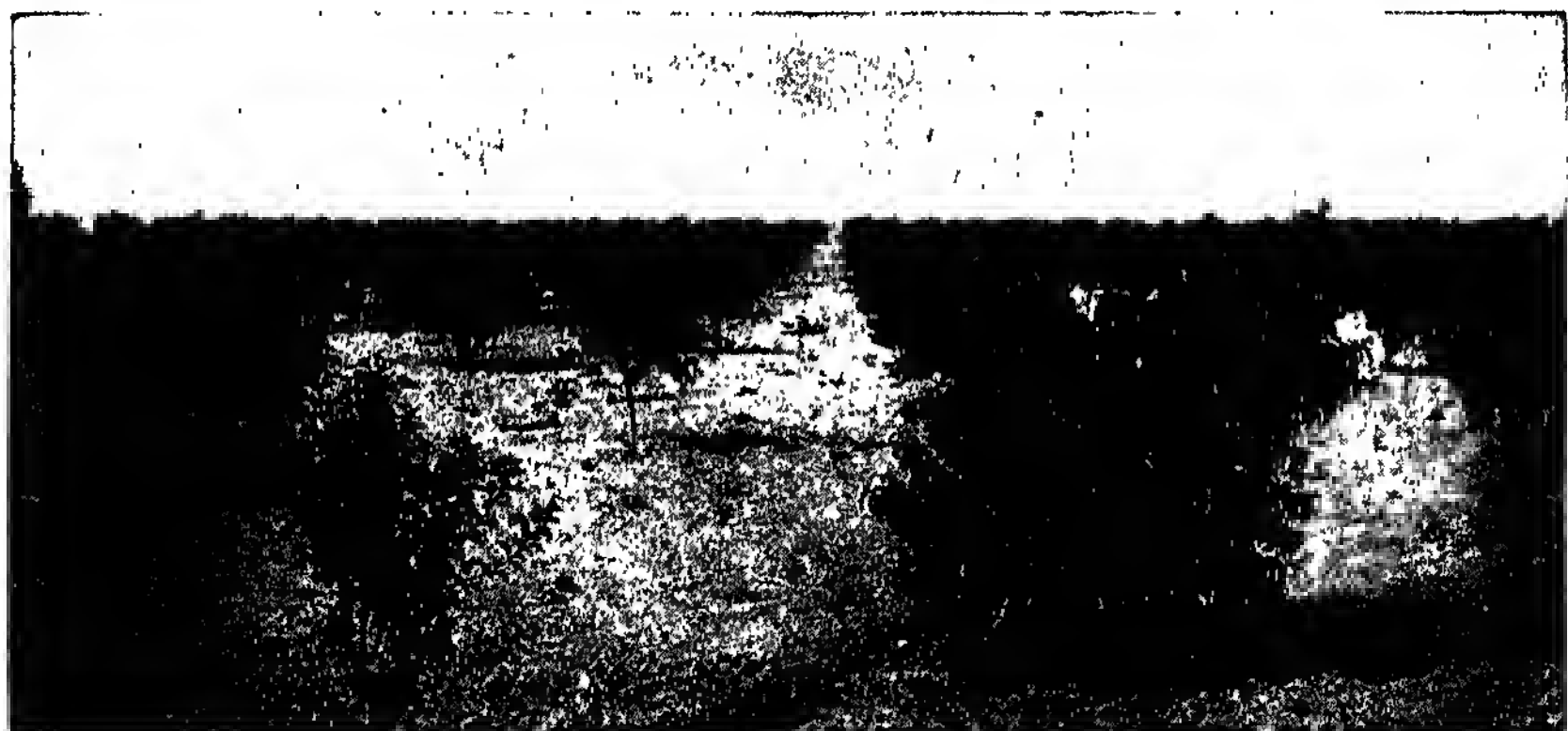
Photograph by Busch.

Great flour mills like this help to feed a hungry world. It is situated at St. Joseph, Missouri, just across the Missouri River from Kansas, and can make 12,000 barrels a day. The round tanks are the grain elevators, which will hold 2,500,000 bushels of grain. The railroad tracks bring the grain to the mill and take the flour away. Kansas is one of the leading states in the Union in the production of wheat, and Missouri grows much more than is consumed in that state. A supply, therefore, is close at hand.

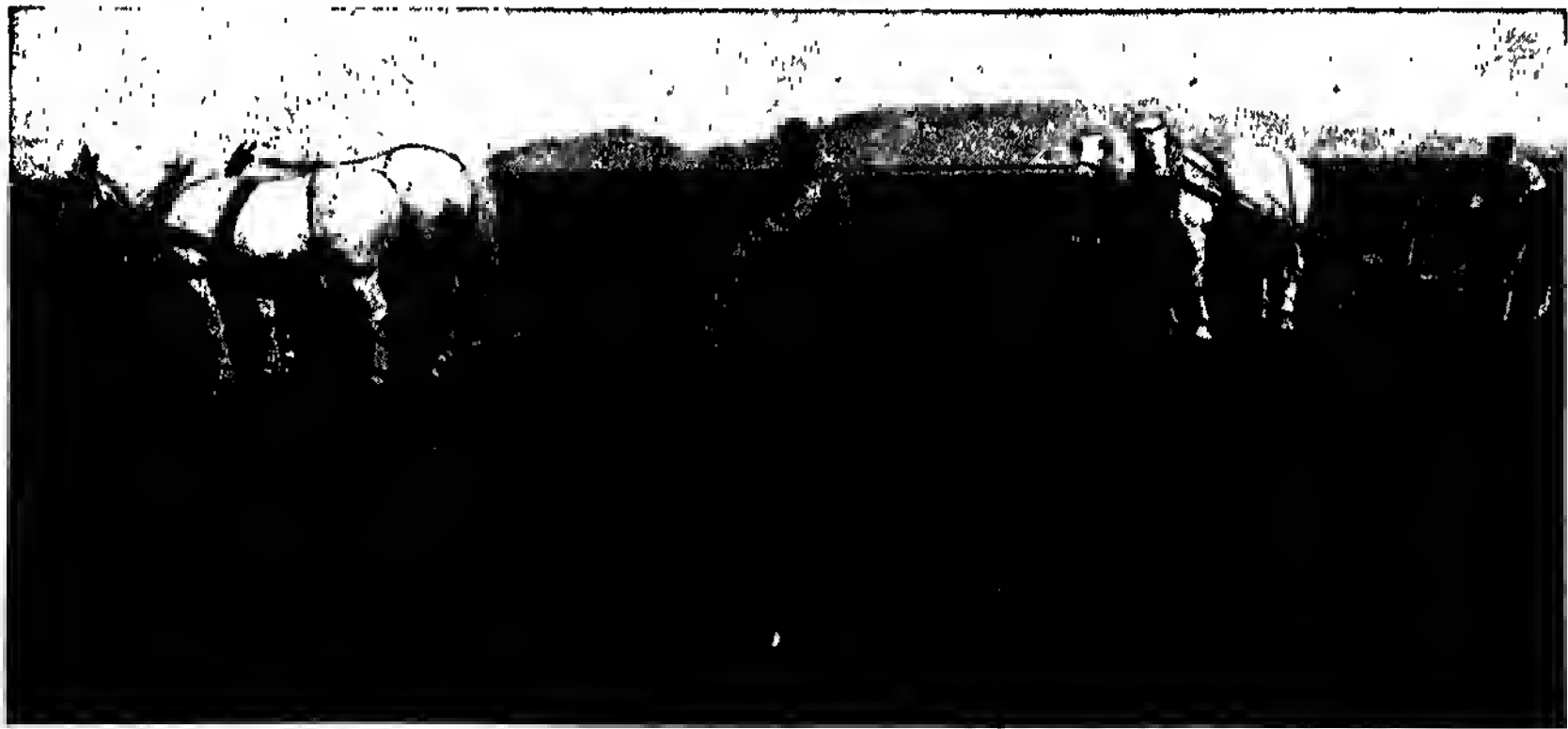
WOOL, FRUIT AND HAY IN NEW MEXICO



New Mexico has become one of the leading states in the production of wool. Here we see wagons loaded with wool coming to the town of Roswell, from which it will be shipped to be manufactured into cloth.



This thrifty young orchard is just beginning to bear. Notice that peach and apple trees are set in alternate rows. The land is so nearly level, and the trees so nearly the same size that the whole orchard looks as if the tops of the trees had been cut off evenly with a great scythe.



Though alfalfa is a common crop, grown for hay, it is not really a grass, as so many people suppose. It belongs to the same family as peas, beans and clover. Alfalfa has very long roots, which can seek water far below the surface. Several cuttings can be made every year, and the yield is heavy.

Photographs by Wilfred Smith, Roswell, New Mexico.

A CITY NAMED FOR AN INDIAN CHIEF



Seattle contains some of the largest lumber mills in the world, which is not surprising, as Washington is the leading state in the production of lumber. The contrasts of light and shade in this picture of one of the great shingle mills make it really beautiful. There are many kinds of manufacturing plants in the city, which has grown so rapidly and shown so much enterprise in so many different directions.



The city is beautifully situated between Puget Sound, which opens on the ocean, and Lake Washington. These are the locks of the great Lake Washington Canal, which connects the two and makes the harbor space much longer. The largest ocean-going ships, either merchant vessels or war ships, can pass through the locks.

Pictures by courtesy of the Chamber of Commerce.

FRUIT-GROWING NEAR LOS ANGELES



This is a part of a grove of 1,800 acres of olive trees. The men are picking the olives for oil. The pickled olives you generally see are picked while still green, but when the oil is to be extracted they are picked just as they ripen. Ripe olives are also pickled. Though many thousand acres of olive trees are grown in the United States, we must still import many olives and much oil from abroad.

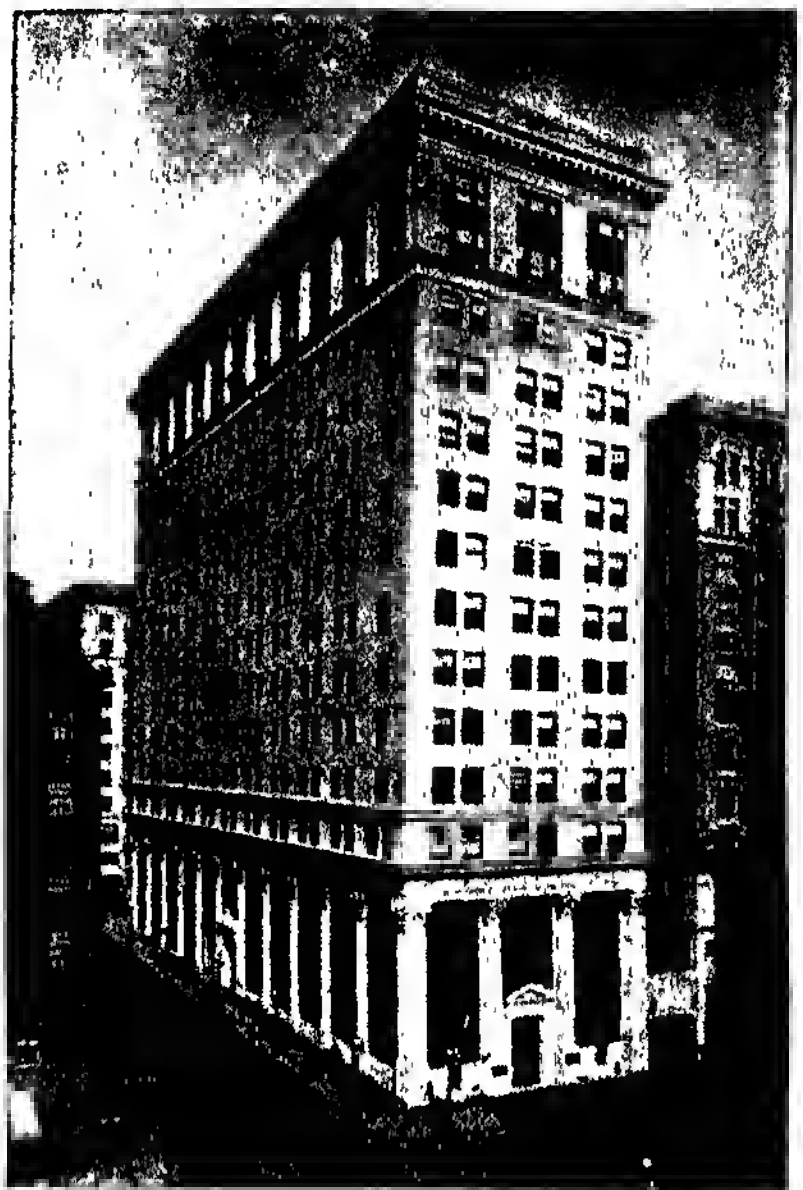


Through irrigation precisely the right amount of water can be supplied to crops in groves. Here you see the streams of water being led where they will do the most good. The trees are in full bloom and need the water which is being supplied. Notice the difference between the dry and the wet ground. Pictures by Putnam & Valentine.

PORTLAND, AND ITS FAMOUS HIGHWAY



The Columbia River highway runs, for forty-seven miles, beside the river. It is a joy to motorists, and the trip over it is always much enjoyed, because of the smoothness as well as the wonderful scenery.



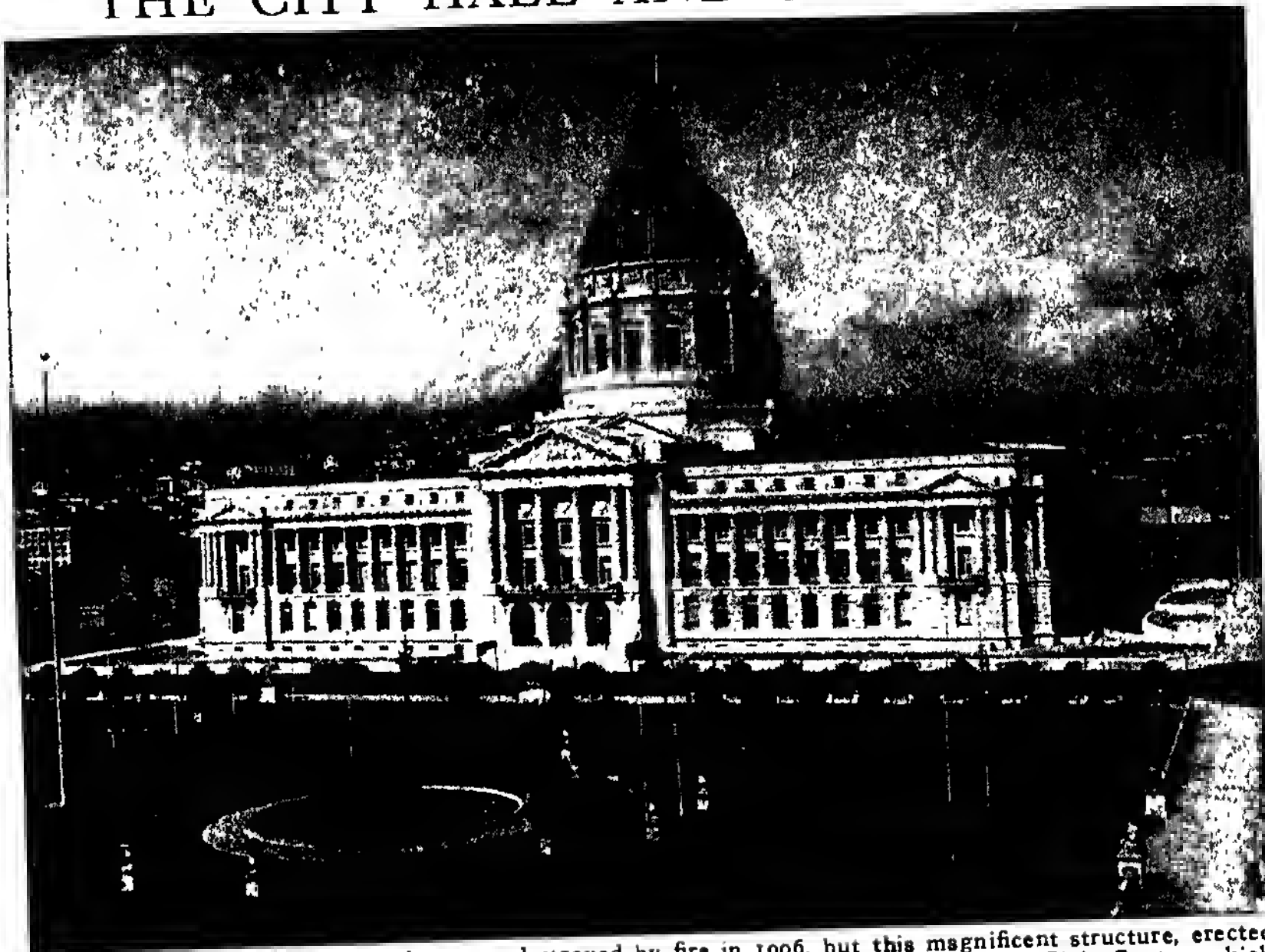
The city of Portland, Oregon, is one of those Western towns which have grown up like magic, and its business district is filling with high office buildings like this. This belongs to the Northwestern Bank.



Some institutions prefer to occupy the whole of their buildings. This is the home of the First National Bank, and like so many bank buildings, resembles a Grecian temple. Portland is the largest city in Oregon, has an excellent harbor, and large foreign commerce, and also has many and important manufacturing establishments.

Picture by Gifford & Prentiss.

THE CITY HALL AND SEAL ROCKS



The old City Hall in San Francisco was destroyed by fire in 1906, but this magnificent structure, erected to take its place, far surpasses it in beauty and convenience. It is a part of the new Civic Centre, which includes also a Municipal Auditorium, a state building and a public library. All these buildings face upon a public square, and together form a group hardly to be equaled in any other city in the country.



Seal Rocks, in San Francisco Bay, are one of the sights of the city. From the Cliff House thousands have watched and heard the seals as they clamber over the rocks, which, as you see, are almost covered with them. They are not fur seals, but sea lions. One is the Steller sea lion, which sometimes weighs as much as 1800 pounds. The other is smaller. Both range north along the Pacific Coast to Alaska, or even beyond.

THE Wise Man here tells us how by giving sympathy we can help those who are in trouble. He explains to us how it is that spectacles give so much assistance to us in seeing if our eyes are not very strong. In this place the Wise Man gives us the answers to several very interesting and puzzling questions. He explains how it is that an ugly bump appears if a boy bumps his head against anything hard, the great value of the metric system which some of us find so hard to learn, why it is a bad thing to use headache powders. When we look ruefully at a hole which has suddenly appeared in the knee of a stocking, we wonder where the wool, or silk, or cotton can have gone. The Wise Man has an answer for this too, and also for the much bigger question, Why does the sea not fall out when part of the world faces down? He tells us about beautiful voices, how it is we get more light from a candle if we have mirrors in the room, and how our brains go on developing and growing stronger after we have reached our full height.

DOES SYMPATHY HELP US?

SYMPATHY does help us, and it is help just as truly as money would be, and it often helps where money would be of no use at all. This we see every day when people are suffering, not from lack of money, but from illness or pain or a great sorrow. In such cases sympathy is worth all the world to them.

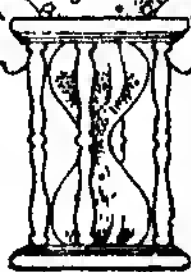
We are so made that sympathy, besides comforting the mind, may even relieve the pain. We all know how the sympathy of someone we love, showing itself by quietly stroking the forehead, may really relieve a headache. The interesting point about this power of sympathy is that it must come from a person with whom we are "in sympathy," as people say.

If it comes from the wrong person it will do more harm than good. Very much of the success and usefulness of the most successful doctors and nurses comes not from their skill, but from their power of sympathizing with their patients.

HOW DO SPECTACLES HELP US TO SEE?

Of course we understand that the spectacles do no seeing themselves, and there must be many kinds of difficulty in seeing for which no spectacles can do anything. The brain may be injured in its vision quarter, the nerve of the eye may be pressed upon or torn, the curtain at the back of the eye may be starved of blood or poisoned, the lens of the eye may

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be opaque instead of transparent, and so on. In such cases no spectacles are of any use. All they can do is simply to bend the rays of light passing through, in such a way that the rays fall rightly upon the curtain at the back of the eye.

It is often expected that spectacles will make people keen-sighted, but that is quite a mistake. One man with eyes quite healthy and sound, but perhaps needing spectacles, may get a pair which suit him perfectly; but he may still be quite unable to make out things at a distance which another man may see quite clearly, with or without spectacles.

Glasses may either bend rays of light inward toward each other, so that they come to a point sooner than they would otherwise have done, or they may bend the rays rather away from each other—or, at least, make them come to a point much later than they would otherwise have done. The rays are all wanted to come together at the retina; so, if the eye is too short, converging lenses, shaped like a burning-glass, are wanted, while concave, or hollowed-out, lenses are needed if the eyeball is too long.

Then, if the eyeball is so shaped that it does not treat rays the same way from side to side as up and down, we require a sort of barrel or cylinder-shaped lens, curved much more in one direction than in the other. When lenses are put together, one in front of the other, we have microscopes and

telescopes. But, even with the largest telescope, differences in natural keenness of eye remain, and one man will discover comet after comet where another will be unable to see anything.

CAN A MACHINE BE MADE TO COUNT?

Yes, calculating machines "count." They have no voice with which to say aloud "one, two, three, four, five," but they count for us when we press certain levers. Figures are made on cylinders or disks, which are driven by various toothed wheels. These disks are so connected that, when one disk is caused to turn ten spaces, the disk next to it turns one space. This serves for a sum in adding up. For subtraction, the disks revolve in the opposite direction. But that is simple work which any child can do. Men may make mistakes; but these machines, provided that they are in order, cannot make mistakes. They are so accurate that they are trusted more than men. All our most important astronomical and mathematical tables are worked out by these wonderful machines which man makes to be more accurate than he himself can ever hope to be. The machines are used in all the big insurance and large business offices. Early in the nineteenth century, Charles Babbage, a great mathematician, gave thirty years of his life to making a calculating machine, but it was not a success. The best machine in use to-day not only adds, subtracts, and divides, and shows the correct result, but actually prints the whole.

DO WE ALWAYS SEE EVERYTHING THE MOMENT IT HAPPENS?

On the contrary, we never see anything the moment it happens. Seeing is a very quick process, but yet it takes time. In the first place, when we see anything happen, the light from the objects we are looking at has to travel through space to reach our eyes. Now, light travels about 186,000 miles in a second, so when we are looking at something near at hand, or at anything on the earth, the time spent in this way is such a very tiny part of a second that we cannot imagine it.

But the stars are very distant, and lately astronomers saw something in the sky, certainly not the moment it happened, for they reckon that it must really have happened when James I. was on the throne of England and the first settle-

ments in this country were being made. But this is not all. When the light reaches the eye, and passes through the front of the eye and reaches the nerve-cells in the retina, or curtain at the back of the eye, something which we can only call a nerve-current travels along the nerve of the eye to the brain, and through the substance of the brain to its very backmost part, where we really see things.

A nerve-current travels at about the rate of an express train—say, fifty to sixty miles an hour; so we may reckon how long it takes to travel some six inches or so, from the eye to the seeing centre in the brain. Lastly, the cells in the brain do their share, which takes more time than all the rest put together, and when that is done—we see.

WHY DO WE NOT GROW UP ALL AT ONCE?

It is not in the nature of any living creature to be born full-grown. There is always a period of what is called development. In the case of the very humblest animals and plants such as microbes, this period is so short as to be scarcely worth mentioning; whereas, as life ascends, the period of development grows longer and longer.

All development is itself a miracle, and no less than if it really occurred all at once. We are beginning now to understand the reasons why it takes such a particularly long time for human beings to grow to their full size. The fact which most distinguishes our growing is the growth of the brain. This comes first, so that the development of the brain is always ahead of the rest of the body; and it has to be so for the very good reason that the growth and health of the rest of the body so largely depend upon the brain, which therefore has to lead the way. That is why a new-born baby's head is so huge compared with the rest of its body. But though the brain is the first to begin and always leads the way, it is very interesting to know that the brain is not the first to stop.

On the contrary, when all the bones have stopped growing, so that we shall never be any taller, and when the rest of the body is fully developed, say, at twenty-seven or twenty-eight, the brain is still developing, though it may not be actually growing larger in size; and it is not until many years later that a healthy man, who leads a sensible life, reaches

the height of his mental powers. Most of the great works of thought that have made the history of the deepest kinds of knowledge have been written by men fifty years old or more.

WHERE IS THE WHITE MAN'S GRAVE?

This is the name which was very rightly given in the old days to part of the coast of West Africa, when white men first went there for the riches of the district and found that those who stayed for only a short time nearly all died or came to death's door. The great cause of this was the fever called malaria. In the course of long ages, the chemistry of the bodies of the natives of a malarial district, such as the White Man's Grave, has become changed, so that they can resist the poison of malaria. The poison enters practically every one of them when they are tiny children, but it does them comparatively little harm. The white man, however, is a very easy prey, and is struck down almost at once.

WHAT CAUSES MALARIA?

The name malaria means "bad air," and people thought that the poison must be in the air which was breathed in these places. But within a short space of time, as we read on page 3202, it has been found that malaria is due to a tiny living creature which is put into a person's blood by a certain kind of mosquito when it bites him. And now, in all parts of the world where the people have enough sense, this mosquito is being attacked, and people are taking care not to be bitten even by the mosquitoes that remain.

WHY DOES AN APPLE TURN BROWN IF WE BITE IT AND PUT IT ASIDE?

This is one of many similar instances. We notice that the same sort of thing happens to some kinds of meat. When we cut a slice, the surface left is at first pale, but before very long it turns quite a dark brown. Now, we know that when various metals are left exposed to the air, their surfaces change color. This is true, for instance, of iron; and we say that the iron rusts. The easiest way to understand the change in an apple is to say that it rusts. That, I believe, is more than a mere comparison. The change in color is certainly due to a true oxidation; something in the apple combines with the oxygen in the air, and the change of

color is produced. Now, it is quite probable that it is the iron in the apple which is responsible for this quick oxidation, and for the change of color which is produced by it. The color of the apple after the surface has been oxidized quite suggests the color of oxidized iron, and it is the case that probably all the colors of all kinds in all living things are due to the iron they contain. Chemists know how rich and various are the colors of the compounds of iron—brilliant red, the most intense blue, vivid green, and so on, and these colors suggest to us the cause of the colors of life in all its forms.

WHY DO FLOWERS DROOP IN A HEATED ROOM?

The shape and the balance of a flower very largely depend upon the water it contains. This is no doubt due in some degree to the mere presence of the water in itself. In a heated room the air, because it is heated, can hold a good deal of moisture. This means that the water rapidly leaves the flower through every part of its surface, and so the flower becomes dried up, it withers, and droops. This will happen much less rapidly, of course, if the stalk of the flower is placed in water which it can suck up to some extent to make up for its rapid loss of water to the air.

But there can be little doubt that more than the question of water itself is concerned. All life is lived in water, and the very life of the flower is interfered with directly the supply of water falls short. Yet, again, a flower is meant to live in the open air. Such a flower as a rose, or any other flower that grows in the open air in this country, has its fibres and tissues so put together that they shall be stiff enough at the ordinary temperature of the open air. But the fibres which were stiff enough at such a temperature may not be stiff enough when the flower is heated, for just the same kind of reason as that which makes sealing-wax soften when it is heated.

WHAT IS THE ADVANTAGE OF THE METRIC SYSTEM?

The advantages of the metric system are almost endless. They are so great that the metric system is used all over the world by men of science of all kinds; it is used in business in most parts of the world now, and every year it is being more generally used. All the measures in it are tens or tenths of the measures

next to them. Instead of having 12 inches 1 foot, 3 feet 1 yard, 1,760 yards one mile, and so on, we have all the measures in the metric system going by tens.

This means that every kind of reckoning is made very simple because, in order to reduce one measure to another, it is merely necessary to move a decimal point along in one direction or the other. The huge labor of multiplying and dividing, made necessary by other measures, is all done away with.

Still more important is it that under the metric system all the different kinds of measures are related. In other systems, measures of length and of weight and of bulk, for instance, are all quite different; no measure of one of these kinds has anything particular to do with any other, and so there is more confusion than ever.

But in the metric system all these different kinds of measures are related, so that it is the easiest thing in the world to reckon the relation between bulk and weight, length and capacity. Then, again, the metric system agrees with the best method of measuring heat, which also goes by decimals. The time will have to come, and that before very long, when the metric system will be used all over the world, and will also be applied to coinage and money in general, to the great advantage of children who have to learn arithmetic.

WHY DO WE PRESS HARD ON DOWN STROKES WHEN WRITING?

One reason for this is the way in which pens are made. Whether we use a quill or a metal pen, it is so made that it runs more freely, if pressed, coming downward than it does going upward, for when it goes upward, if pressed, the point is apt to stick in the paper. That, however, is certainly not the whole reason. Even when we use a pen that has a turned-up point, or when we use a pencil, we find that we tend rather to press coming downward. This remains true even if we make the experiment of writing with the top end of the pencil turned away from us, instead of turned toward us. There is no doubt that the real reason is to be found in the way in which our hands are made.

The muscles that bend our fingers are vastly stronger than those that unbend them. Bending them is, of course, the important thing that requires strength, because it is by bending the fingers that we hold and grasp. The muscles that

unbend are, comparatively, very feeble, just as the muscles that open the mouth are feeble compared with those that close it. So we naturally use more force on the strokes we make with the closing than with the unclosing muscles.

IS A LIGHTED CANDLE IN FRONT OF A MIRROR EQUAL TO TWO CANDLES?

There is no doubt that when we put a candle in front of a looking-glass we seem to see two candles, and there is also no doubt that both from the real candle and from the reflected candle real light comes. If we have two glasses opposite each other, or if we have a light in a room with a number of mirrors, it seems as if we could multiply the light almost to any extent.

This has puzzled many people, for something tells us that we cannot get something out of nothing, and yet it looks in this case as if from one candle we were really somehow getting the light of two candles, or of many more. But what really happens is that we are getting proper value for the light of one candle.

The difference is tremendous if we take a candle and put it into a room with black walls, and then take the same candle and put it into a room the walls of which are lined with mirrors. In one case a great proportion of the light is absorbed, or sucked up, by the walls; in the other practically the whole of it is thrown back, and sooner or later reaches our eyes.

If people understood this better, they would realize what good economy it is to have their rooms covered with some surface that is very light in color, and at the same time can be washed. It is good economy because far less light is needed to light such a room, the walls of which throw back nearly all the light in the room instead of sucking it up.

WHY DOES A BUMP COME INSTEAD OF A DENT WHEN WE KNOCK OUR HEADS?

It is quite possible to make a dent in the skull, or in a bone, just as in a table, but the blow would have to be hard, and would have to be made by something with a sharp edge, and even then the dent would not last long, but would soon be filled up, and much more than filled up, for a bump would be formed. The reasons why this bump is formed are very interesting.

When you have knocked your head, you have done a certain amount of damage at the place, and what happens

there is what happens at any part of the body that has been damaged. The same is true whether the damage is due to a blow, or to a cut, or to a sting, or to the presence of microbes.

Everything that makes the bump is due to the body's effort to repair the damage; and so we are to look on the bump as natural "doctoring," which is what it really is. The blood-vessels in the affected part enlarge, so that a quantity of blood goes there. Certain of the fluids of the blood soak through the walls of the blood-vessels, while numbers of white blood-cells pass through the walls also, and the swelling is due to the extra amount of fluid and to this vast congregation of cells that assemble in the place.

They are all there for a purpose; they bring materials from which new things can be made to replace and repair anything that has been damaged or broken. If microbes are there, the fluids include substances which are poisonous to microbes, and the white cells eat the microbes up, and the part is made well again.

WHAT MAKES A HEADACHE?

A whole book could be written about headache, for it has so many causes. *A very common one is decayed teeth*, as any doctor will now tell you.

The nerve that supplies the forehead and the front part of the scalp is the same as the nerve that sends branches to the jaws and teeth; and when one part of it is disturbed, the other is likely to give us trouble too. So when any of us has constant headaches we must be sure to attend to any decayed teeth that we may have.

Another very common cause of headache is strain of the eyes in reading. This does not happen to those few and fortunate people whose eyes are of exactly the right shape and size, nor does it happen to short-sighted people; but it constantly happens to those whose eyes are what we call long-sighted. They can see clearly at long distances, but for sight at short distances, as in reading and writing, they need to strain the eye in order to see the letters clearly, and this strain almost always gives rise to headache. The remedy is to use glasses to assist the muscles inside the eye to do the excessive work imposed upon them. This will relieve the strain and the consequent headache.

ARE HEADACHE POWDERS GOOD THINGS?

Everyone should know that the answer to this is, No—a thousand times, No. There is no headache powder anywhere that does anything to remove the cause of any headache. Headache powders only dull the brain so that we cannot feel the pain, and so very often persuade us to give up attending to ourselves, as we should do if the pain were still there. The powder does nothing for the decayed teeth, or the strained eyes, or the overloaded stomach, that may be the real cause of the trouble.

These powders are all poisons, and people have often been killed by them. It is very wrong that men should be able to sell these things. People get into such a condition that they cannot do without them, and they gradually injure their brains and their minds, and do harm much greater than that which they seem to relieve in curing the headache.

WHAT MAKES A SICK-HEADACHE?

In the answer to the previous questions, we have read about three of the many causes of headache; but this question is about a quite special kind of headache that has nothing to do with the teeth or eyes, and makes us much more miserable than an ordinary headache does. The pain may not be so great, but we are more unhappy, because we feel bad *all over*, and not only in the head. When we feel bad *all over*, the reason is almost always to be found somewhere inside the trunk of the body, and, nine times out of ten, in the stomach or its neighborhood.

In other words, this is a kind of headache that suggests to the doctor, not teeth or eyes, but indigestion. People who never have indigestion never have these horrible sick-headaches. The best way to avoid them is to be careful and sensible about what we eat; and the best way to cure them is to believe that Nature is wise in making an appetite disappear for a little. If we stop eating, and so give the stomach time to recover, and if we take some simple salts, or something of the kind, to clear away what is poisoning the blood and the brain, we shall soon be well.

WHERE DOES THE WOOL GO WHEN WE GET HOLES IN OUR STOCKINGS?

This question really and rightly assumes the answer to another question: Does the wool go to nowhere? The answer to that question is No, for we

know that it is impossible for anything to go nowhere.

Now, we can find out what happens to the wool by asking how this hole in the stocking is made. Holes do not come in stockings as long as they lie in drawers unused. It is when and where a stocking is rubbed that the holes come. After a lot of walking that wears a hole in a stocking, we could certainly find traces of wool on the skin and inside the boot if we were to look with a microscope.

WHY IS BREAD CALLED "THE STAFF OF LIFE"?

This is a very old name for bread, and, unlike many such old names, it is a very good one. Spirits used long ago to be called the "water of life," or, in Latin, *aqua vitæ*, but everyone knows now, or should know, that if they are to have any name of the kind, it should be *aqua mortis*, water of death. The old name, however, was hastily given to spirits by those who first discovered the way to distil alcohol, and who naturally wanted to make the most of their discovery.

The belief that bread is a very good food, which is what men mean when they call it "the staff of life," is very old indeed. It must doubtless date back to the remote ages when men first grew corn for the purpose of making bread, and our reading in the Old Testament about the famine in Egypt in the time of Joseph will give us some idea of the high honor in which grain was held a very long time ago.

WHY IS BREAD SUCH A VALUABLE FOOD?

It is only in the last few years that men have learned how to study all kinds of food, and find out exactly how good they are, and in what way they are good, for the human body. This has been done, many times over and in many different ways, for thousands of foods and drugs, and certain very important facts have already been firmly established. We are still in much doubt as to the exact value of meat and of many other foods; but everyone who has any right to an opinion is agreed as to the value of bread. Milk is the staff of life in our earliest years, and nothing else can replace it. But, though no other one food is as all-important in later years as milk

is at first, bread is superior to everything else in its food value, and its cheapness and its freedom from anything that injures the body. Therefore, it cannot be too cheap.

WHY HAVE SOME PEOPLE MORE BEAUTIFUL VOICES THAN OTHERS?

If anyone has something the matter with the little cords in his throat that make his voice, it will be harsh or husky. A drunkard has usually injured his vocal cords, and so his voice is usually husky. But if people's vocal cords are quite well they are very like each other; and the difference between beautiful voices and ordinary voices has *nothing at all to do* with the vocal cords. The vocal cords of the most beautiful singer, if we could hear the sound they make by themselves, away from the rest of the throat, would disappoint us very much. The sound made by the vocal cords is always harsh and ugly. The beautiful singer is one who, firstly, has his throat and nose and mouth of exactly such shapes that they change the sound made by his cords into a pleasant sound. Secondly, he is a person who has learned how to move the muscles of his throat and tongue and cheeks so as to make the sound as beautiful as possible. No one can make uglier sounds than a good singer, if he really wants to, for he is so clever in controlling these muscles that vary and modify sounds.

WHY DO SOME PEOPLE SPEAK MUSICALLY AND OTHERS HARSHLY?

It is thought that the chief difference between people who speak in a beautiful voice and people who speak in an ugly voice is a difference not in the vocal cords, or yet in the throat, nor even in skill in using the muscles used in speech or singing; but it is a difference *in the brain*. People who have delicate ears—which means people whose brains, in the part which hears, are beautifully and finely made—will produce the kind of sound their brain likes, at any rate as far as they can; and almost anyone can speak, or even sing a few soft notes, in beautiful tones, *if they try*. But if our brain is coarsely made, and does not know or care about the difference between beautiful tones and ugly ones, then we shall just make the sounds that carry farthest, or take the least trouble to make, however ugly they are.

THE DESERTED VILLAGE

THE Deserted Village," "She Stoops to Conquer," "The Traveler" and "The Vicar of Wakefield" are the best known works of Oliver Goldsmith, author, poet, and playwright. Born in Ireland in 1728, he went to Trinity College, Dublin, in his sixteenth year, but was too idle and pleasure-loving to shine as a scholar. After leaving college he wandered through Europe, earning his bread and lodging by playing "merry tunes" on his flute. At about the age of thirty he settled in London and began to write. As his fame grew he became acquainted with Johnson, Reynolds, Burke, and other great men of the time. Throughout his life he was an impractical and self-indulgent man, always getting into scrapes, yet so lovable withal that many of the chief men of his day were his devoted friends. Carlyle calls his novel, "The Vicar of Wakefield," "the best of all modern idylls."

SWEET Auburn! loveliest village of the plain,
Where health and plenty cheered the labouring swain,
Where smiling spring its earliest visit paid,
And parting summer's lingering blooms delayed.—
Dear lovely bowers of innocence and ease,
Seats of my youth, when every sport could please—
How often have I loitered o'er thy green,
Where humble happiness endeared each scene;
How often have I paused on every charm—
The sheltered cot, the cultivated farm,
The never-failing brook, the busy mill,
The decent church that topped the neighbouring hill,
The hawthorn bush, with seats beneath the shade,
For talking age and whispering lovers made!
How often have I blest the coming day,
When toil remitting lent its turn to play,
And all the village train, from labour free,
Led up their sports beneath the spreading tree—
While many a pastime circled in the shade,
The young contending as the old surveyed;
And many a gambol frolicked o'er the ground,
And sleights of arts and feats of strength went round;
And still, as each repeated pleasure tired,
Succeeding sports the mirthful band inspired—
The dancing pair that simply sought renown
By holding out, to tire each other down;
The swain mistrustful of his smutted face,
While secret laughter tittered round the place:
The bashful virgin's sidelong looks of love,
The matron's glance that would those looks reprove:—
These were thy charms, sweet village!
Sports like these,
With sweet succession, taught e'en toil to please;
These round thy bowers their cheerful influence shed,

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These were thy charm—
but all these charms
are fled.

Sweet smiling village, loveliest of the lawn,
Thy sports are fled, and all thy charms withdrawn;
Amidst thy bowers the tyrant's hand is seen,
And desolation saddens all thy green:
One only master grasps the whole domain,
And half a village stints thy smiling plain.
No more thy glassy brook reflects the day,
But choked with sedges works its weedy way;
Along thy glades, a solitary guest,
The hollow-sounding bittern guards its nest;
Amidst thy desert-walks the lapwing flies,
And tires their echoes with unvaried cries.
Sunk are thy bowers in shapeless ruin all,
And the long grass o'ertops the mouldering wall;
And, trembling, shrinking from the spoiler's hand,
Far, far away thy children leave the land.
Ill fares the land, to hastening ills a prey,
Where wealth accumulates, and men decay:
Princes and lords may flourish, or may fade—
A breath can make them, as a breath has made;
But a bold peasantry, their country's pride,
When once destroyed, can never be supplied.
A time there was, ere England's griefs began
When every rood of ground maintained its man
For him light labour spread her wholesome store,
Just gave what life required, but gave no more;
His best companions, innocence and health;
And his best riches, ignorance of wealth.

But times are altered; trade's unfeeling train
Usurp the land, and dispossess the swain:

Along the lawn, where scattered hamlets
rose,
Unwieldy wealth and cumbrous pomp re-
pose,
And every want to luxury allied,
And every pang that folly pays to pride,
Those gentle hours that plenty bade to bloom,
Those calm desires that asked but little room,
Those healthful sports that graced the peace-
ful scene,
Lived in each look, and brightened all the
green,—
These, far departing, seek a kinder shore,
And rural mirth and manners are no more.

Sweet Auburn! parent of the blissful hour,
Thy glades forlorn confess the tyrant's power,
Here, as I take my solitary rounds,
Amidst thy tangling walks and ruined grounds,
And, many a year elapsed, return to view
Where, once the cottage stood, the hawthorn
grew—

Remembrance wakes, with all her busy train,
Swells at my breast, and turn the past to pain.

In all my wanderings round this world of care,
In all my griefs—and God has given my
share—

I still had hopes my latest hours to crown,
Amidst these humble bowers to lay me down;
To husband out life's taper at the close,
And keep the flame from wasting, by repose;
I still had hopes—for pride attends us still—
Amidst the swains to show my book-learned
skill,

Around my fire an evening group to draw,
And tell of all I felt, and all I saw;
And, as a hare, whom hounds and horns
pursue,

Pants to the place from whence at first she
flew,

I still had hopes, my long vexations passed,
Here to return—and die at home at last.

Sweet was the sound, when oft at evening's
close,

Up yonder hill the village murmur rose;
There, as I passed with careless steps and
slow,

The mingling notes came softened from
below;

The swain responsive as the milkmaid sung,
The sober herd that lowed to meet their
young,

The noisy geese that gabbled o'er the pool,
The playful children just let loose from school,
The watch-dog's voice that bayed the whisper-
ing wind,

And the loud laugh that spoke the vacant
mind—

These all in sweet confusion sought the shade
And filled each pause the nightingale had
made,

But now the sounds of population fail,
No cheerful murmurs fluctuate in the gale,
No busy steps the grass-grown footway tread,
For all the blooming flush of life is fled—

All but yon widowed, solitary thing,
That feebly bends beside the plashy spring;
She, wretched matron—forced in age, for
bread,

To strip the brook with mantling cresses
spread,

To pick her wintry fagot from the thorn,

To seek her nightly shed, and weep till morn—
She only left of all the harmless train,
The sad historian of the pensive plain!

Near yonder copse, where once the garden
smiled,
And still where many a garden-flower grows
wild;

There, where a few torn shrubs the place
disclose,

The village preacher's modest mansion rose.

A man he was to all the country dear,

And passing rich with forty pounds a year.

Remote from town he ran his godly race,
Nor e'er had changed, nor wished to change,
his place;

Unpractised he to fawn, or seek for power
By doctrines fashioned to the varying hour,
Far other aims his heart had learned to prize—
More skilled to raise the wretched than to rise.
His house was known to all the vagrant train;
He chid their wanderings, but relieved their
pain;

The long-remembered beggar was his guest,
Whose beard descending swept his aged
breast;

The ruined spendthrift, now no longer proud,
Claimed kindred there, and had his claims
allowed;

The broken soldier, kindly bade to stay,
Sat by his fire, and talked the night away;
Wept o'er his wounds, or, tales of sorrow done,
Shouldered his crutch, and showed how fields
were won.

Pleased with his guests, the good man learned
to glow,

And quite forgot their vices in their woes;
Careless their merits or their faults to scan;
His pity gave ere charity began.

Thus to relieve the wretched was his pride,
And even his fallings leaned to virtue's side;
But, in his duty prompt at every call,
He watched and wept, he prayed and felt for
all;

And, as a bird each fond endearment tries,
To tempt her new-fledged offspring to the
skies,

He tried each art, reprov'd each dull delay,
Allured to brighter worlds, and led the way.

Beside the bed where parting life was laid,
And sorrow, guilt, and pain, by turns dis-
mayed,

The reverend champion stood. At his control
Despair and anguish fled the struggling soul;
Comfort came down the trembling wretch to
raise,

And his last faltering accents whispered praise.

At church, with meek and unaffected grace,
His looks adorned the venerable place;

Truth from his lips prevailed with double
sway;

And fools, who came to scoff, remained to
pray.

The service past, around the pious man,
With ready zeal, each honest rustic ran;
Even children followed with endearing wile,
And plucked his gown, to share the good man's
smile.

His ready smile a parent's warmth expressed,
Their welfare pleased him, and their cares dis-
tressed;

To them his heart, his love, his griefs were
given,

But all his serious thoughts had rest in heaven.

As some tall cliff that lifts its awful form,
Swells from the vale, and midway leaves the
storm ;
Though round its breast the rolling clouds are
spread,
Eternal sunshine settles on its head.

Beside yon straggling fence that skirts the
way,
With blossomed furze unprofitably gay,
There in his noisy mansion skilled to rule,
The village master taught his little school ;
A man severe he was, and stern to view,
I knew him well, and every truant knew ;
Well had the boding tremblers learned to trace
The day's disasters in his morning face ;
Full well they laughed with counterfeited glee
At all his jokes, for many a joke had he ;
Full well the busy whisper, circling round,
Conveyed the dismal tidings when he frowned—
Yet he was kind, or if severe in aught,
The love he bore to learning was in fault.
The village all declared how much he knew ;
'Twas certain he could write, and cipher too ;
Lands he could measure, terms and tides
presage—
And e'en the story ran that he could gauge ;
In arguing too, the parson owned his skill,
For e'en though vanquished, he could argue
still,
While words of learned length and thundering
sound
Amazed the gazing rustics ranged around—
And still they gazed, and still the wonder grew
That one small head could carry all he knew.
But passed is all his fame : the very spot,
Where many a time he triumphed, is forgot.

Near yonder thorn, that lifts its head on
high,
Where once the sign-post caught the passing
eye,
Low lies that house where nut-brown draughts
inspired,
Where gray-beard mirth and smiling toil re-
tired,
Where village statesmen talked with looks
profound,
And news much older than their ale went
round.
Imagination fondly stoops to trace
The parlour splendour of that festive place ;
The whitewashed wall, the nicely sanded floor,
The varnished clock that ticked behind the
door—
The chest contrived a double debt to pay,
A bed by night, a chest of drawers by day—
The pictures placed for ornament and use,
The twelve good rules, the royal game of
goose—
The hearth, except when winter chilled the
day,
With aspen boughs and flowers and fennel
gay—
While broken teacups, wisely kept for show,
Ranged o'er the chimney, glistened in a row.
Vain transitory splendours ! could not all
Reprieve the tottering mansion from its fall ?
Obscure, it sinks ; nor shall it more impart
An hour's importance to the poor man's heart.

TO A BUTTERFLY

This little poem was composed by William Wordsworth at
Grasmere in England, on March 14, 1802, and it referred to
the poet's childhood days spent in the town of Cockermouth
with his beloved sister Dorothy, "Emmeline" being a fanci-
ful name used by the poet instead of his sister's real name.
It was true that Dorothy used to chase the butterflies with
her brother, and it was because she told him later of her fear
of brushing the dust off their wings that he wrote these verses.

STAY near me—do not take thy flight !
A little longer stay in sight !
Much converse do I find in thee,
Historian of my infancy !
Float near me ; do not yet depart !
Dead times revive in thee :
Thou bring'st, gay creature as thou art,
A solemn image to my heart,
My father's family !

Oh, pleasant, pleasant were the days,
The time when, in our childish plays,
My sister Emmeline and I
Together chased the butterfly !
A very hunter did I rush
Upon the prey—with leaps and springs
I followed on from brake to bush,
But she, God love her, feared to brush
The dust from off its wings.

ST. JOHN THE BAPTIST

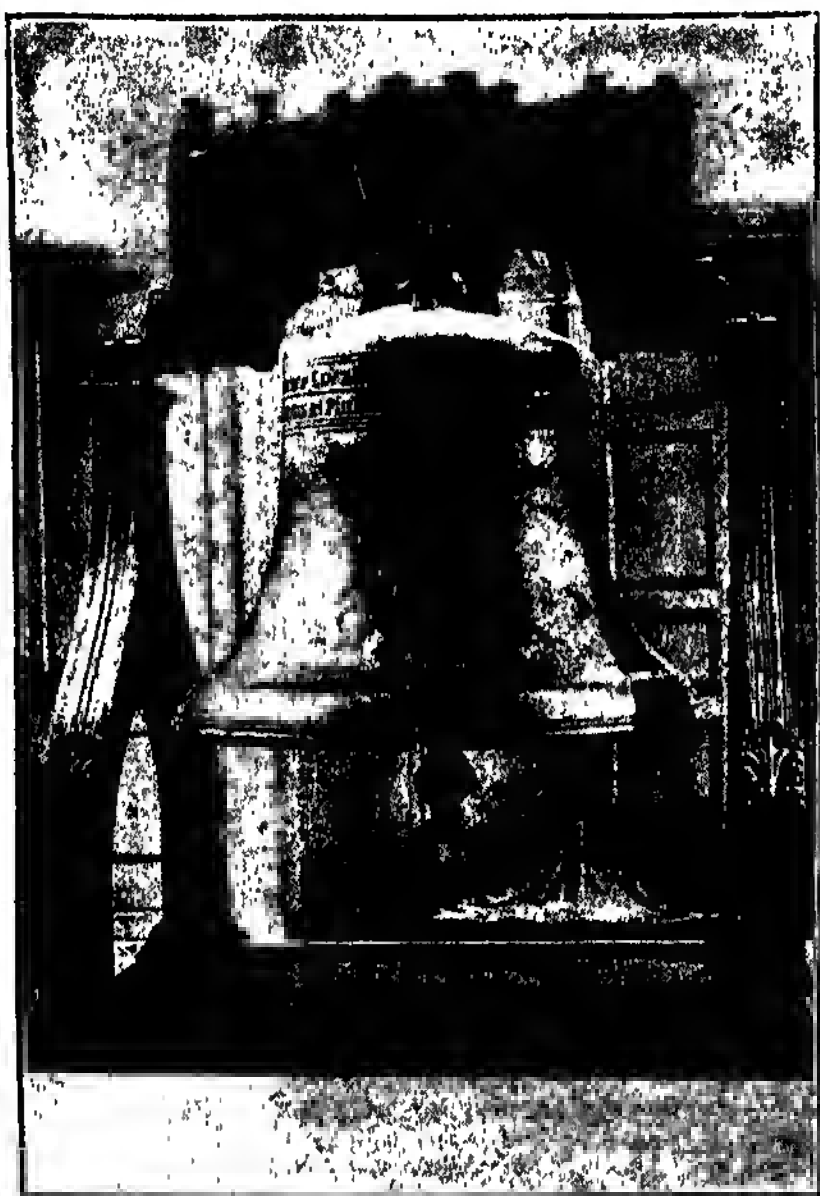
Arthur O'Shaughnessy was an Irishman who was born in
London in 1844 and died in 1881. In this noble poem on
Saint John the Baptist, the biblical references will not
puzzle the young reader at all well versed in Bible stories.
Elias, of course, is another form of Elijah, and the last lines
refer to the prophet speaking with God in Mount Horeb.

I THINK he had not heard of the far towns,
Nor of the deeds of men, nor of kings'
crowns ;
Before the thought of God took hold of
him,
As he was sitting, dreaming in the calm
Of one first noon, upon the desert's rim,
Beneath the tall, fair shadows of the palm,
All overcome with some strange inward balm.
He numbered not the changes of the year,
The days, the nights, and he forgot all fear
Of death. Each day he thought there should
have been
A shining ladder set for him to climb
Athwart some opening in the heavens, e'en
To God's eternity, and see, sublime,
His face whose shadow passing fills all time.
But he walked through the ancient wilder-
ness.
Oh, there the prints of feet were numberless
And holy all about him ! And quite plain
He saw each spot an angel, silvershod,
Had lit upon ; where Jacob, too, had lain.
The place seemed fresh, and bright, and lately
trod ;
A long track showed where Enoch walked with
God.

And often, while the sacred darkness trailed
Along the mountains smitten and unveiled
By rending lightnings, over all the noise
Of thunders and the earth that quaked and
bowed
From its foundations, he could hear the voice
Of great Elias, prophesying loud
To Him whose face was covered by a cloud.

INDEPENDENCE BELL

IT is said that the Liberty Bell was brought over to Philadelphia in 1752 and was rung to celebrate the adoption of the Declaration of Independence on July 4, 1776. After that it was rung on important occasions until it became so badly cracked that it could never be used again. The Liberty Bell has become a beloved symbol of American patriotism and has made several trips to different parts of the United States. Placed carefully in a car especially built for it, and with a guard of honor, it made its last trip to the Panama-Pacific Exposition at San Francisco in 1915. At every town or city at which the train stopped, all the children from the schools were taken to see this treasured relic, which links the great nation of to-day with the thirteen feeble colonies of 1776. It now hangs in the hall of the old State House in Philadelphia, where visitors come to see it from all over the United States. On its side are inscribed the words, "Proclaim Liberty Throughout the Land to all the Inhabitants thereof."



THERE was tumult in the city,
In the quaint old Quaker town,
And the streets were rife with people
Pacing restless up and down,—
People gathering at corners,
Where they whispered each to each
And the sweat stood on their temples
With the earnestness of speech.

As the bleak Atlantic currents
Lash the wild Newfoundland shore,
So they beat against the State House,
So they surged against the door;
And the mingling of their voices
Made a harmony profound,
Till the quiet street of Chestnut
Was turbulent with sound.

"Will they do it?" "Dare they do it?"
"Who is speaking?" "What's the news?"

"What of Adams?" "What of Sherman?"
"Oh, God grant they won't refuse!"
"Make some way, there!" "Let me nearer!"
"I am stifling!" "Stifle, then!"
When a nation's life's at hazard,
We've no time to think of men."

So they beat against the portal,
Man and woman, maid and child,
And the July sun in heaven
On the scene looked down and smiled;
The same sun that saw the Spartan
Shed his patriot blood in vain,
Now beheld the soul of freedom,
All unconquered, rise again.

See! See! The dense cloud quivers
Through all its lengthy line,
As the boy beside the portal
Looks forth to give the sign,
With his little hands uplifted
Breezes dallying with his hair,
Hark! with deep, clear intonation,
Breaks his young voice on the air.

Hushed the people's swelling murmur,
List the boy's exultant cry!
"Ring!" he shouts, "Ring, Grandpa!
Ring! Oh! ring for Liberty!"
Quickly at the given signal
The bell-man lifts his hand,
Forth he sends the good news, making
Iron music through the land.

How they shouted! What rejoicing!
How the old bell shook the air,
Till the clang of freedom ruffled
The calmly gliding Delaware!
How the bonfires and the torches
Lighted up the night's repose,
And from the flames, like fabled Phoenix,
Our glorious Liberty arose!

That old State House bell is silent,
Hushed is now its clamorous tongue,
But the spirit it awakened
Still is living,—ever young,
And when we greet the smiling sunlight
On the Fourth of each July,
We will ne'er forget the bell-man
Who, betwixt the earth and sky,
Rang out, loudly, "Independence,"
Which, please God, shall never die!

PAUL REVERE'S RIDE

Among the "Tales of a Wayside Inn" by Longfellow is the story told by the Landlord concerning the ride that Paul Revere took to Lexington and Concord to warn the people of the approach of the English troops. We may see elsewhere in THE BOOK OF KNOWLEDGE a picture by the same Paul Revere.

LISTEN, my children, and you shall hear
Of the midnight ride of Paul Revere,
On the eighteenth of April, in Seventy-five;
Hardly a man is now alive
Who remembers that famous day and year.

He said to his friend, "If the British march
By land or sea from the town to-night,
Hang a lantern aloft in the belfry-arch
Of the North Church tower as a signal
light,—

One, if by land, and two, if by sea;
And I on the opposite shore will be,
Ready to ride and spread the alarm
Through every Middlesex village and farm,
For the country-folk to be up and to arm."

Then he said "Good-night!" and with
muffled oar
Silently rowed to the Charlestown shore,
Just as the moon rose over the bay,
Where swinging wide at her moorings lay
The Somerset, British man-of-war;
A phantom-ship, with each mast and spar
Across the moon like a prison-bar,
And a huge black hulk, that was magnified
By its own reflection in the tide.

Meanwhile, his friend, through alley and
street,
Wanders and watches with eager ears,
Till in the silence around him he hears
The muster of men at the barrack-door,
The sound of arms, and the tramp of feet,
And the measured tread of the grenadiers,
Marching down to their boats on the shore.

Then he climbed to the tower of the church,
Up the wooden stairs, with stealthy tread,
To the belfry-chamber overhead,
And startled the pigeons from their perch
On the sombre rafters, that round him made
Masses and moving shapes of shade,—
Up the trembling ladder, steep and tall,
To the highest window in the wall,
Where he paused to listen and look down
A moment on the roofs of the town,
And the moonlight flowing over all.

Beneath, in the churchyard, lay the dead,
In their night-encampment on the hill,
Wrapped in silence so deep and still
That he could hear, like a sentinel's tread,
The watchful night-wind, as it went
Creeping along from tent to tent,
And seeming to whisper, "All is well!"
A moment only he feels the spell
Of the place and the hour, and the secret
dread

Of the lonely belfry and the dead;
For suddenly all his thoughts are bent
On a shadowy something far away,
Where the river widens to meet the bay,—
A line of black that bends and floats
On the rising tide, like a bridge of boats.

Meanwhile, impatient to mount and ride,
Booted and spurred, with a heavy stride
On the opposite shore walked Paul Revere.
Now he patted his horse's side,
Now gazed at the landscape far and near,
Then, impetuous, stamped the earth,
And turned and tightened his saddle-girth;
But mostly he watched with eager search
The belfry-tower of the Old North Church,
As it rose above the graves on the hill,
Lonely and spectral and sombre and still.
And lo! as he looks, on the belfry's height
A glimmer, and then a gleam of light!
He springs to the saddle, the bridle he turns,
But lingers, and gazes, till full on his sight
A second lamp in the belfry burns!

A hurry of hoofs in a village street,
A shape in the moonlight, a bulk in the dark,
And beneath, from the pebbles, in passing,
a spark
Struck out by a steed flying fearless and
fleet;
That was all! And yet, through the gloom
and the light
The fate of a nation was riding that night;
And the spark struck out by that steed in
his flight
Kindled the land into flame with its heat.

He has left the village and mounted the
steep,
And beneath him, tranquil and broad and
deep,
Is the Mystic, meeting the ocean tides;
And under the alders, that skirt its edge,
Now soft on the sand, now loud on the
ledge,
Is heard the tramp of his steed as he rides.

It was twelve by the village clock
When he crossed the bridge into Medford
town.
He heard the crowing of the cock,
And the barking of the farmer's dog,
And felt the damp of the river fog,
That rises after the sun goes down.

It was one by the village clock,
When he galloped into Lexington.
He saw the gilded weatherecock
Swim in the moonlight as he passed,
And the meeting-house windows, blank and
bare,
Gaze at him with a spectral glare,
As if they already stood aghast
At the bloody work they would look upon.

It was two by the village clock,
When he came to the bridge in Concord
town.
He heard the bleating of the flock,
And the twitter of birds among the trees,
And felt the hreath of the morning breeze
Blowing over the meadows brown.
And one was safe and asleep in his bed
Who at the bridge would be first to fall,
Who that day would be lying dead,
Pierced by a British musket-ball.

You know the rest. In the books you have read
How the British Regulars fired and fled,—
How the farmers gave them ball for ball,
From behind each fence and farmyard wall,
Chasing the redcoats down the lane,
Then crossing the fields to emerge again
Under the trees at the turn of the road,
And only pausing to fire and load.

So through the night rode Paul Revere;
And so through the night went his cry of alarm
To every Middlesex village and farm,—
A cry of defiance and not of fear,
A voice in the darkness, a knock at the door,
And a word that shall echo for evermore!
For, borne on the night-wind of the Past,
Through all our history, to the last,
In the hour of darkness and peril and need,
The people will waken and listen to hear
The hurrying hoof-beats of that steed,
And the midnight message of Paul Revere.

THE NATURALIZED ALIEN

Every year thousands of immigrants come to our land, settle in our big cities, and soon become naturalized and loyal citizens. This poem by Lurana Sheldon shows the patriotic spirit of one who has learned to love this country and the freedom and liberty for which its flag stands.

THE land I claim claims me!
It holds me sacredly its own, and I
For its best welfare will both fight and die
If such a sacrifice shall be
Part of the great necessity.

The land I claim has made
My chance for victory, for strong success.
In other climes my triumph would be less,
For here has freedom truly laid
Each open path of honest trade.

The land I claim has left
My hands unbound, my will at peace.
Rich are the blessings, precious the release,
From chains whose links were cleft
Ere hope my soul bereft.

The land I claim claims me,
And she shall find her foster-soldier true
To this her flag, the red, the white, the blue,
Though kith and kin shall cross the sea
To call me back to loyalty.

FLAG DAY *

We all love the flag with its rose-red and snow-white stripes, its gleaming stars on the sky-blue field, but we love "our great and glorious flag," because it stands "for hearth and home, for life and liberty." This splendid poem was written by Minna Irving.

THE flag—it stands for hearth and home,
For life and liberty,
Prosperity upon the land,
And safety on the sea.
From every fold, immortal souls
Of countless heroes call;
It represents the truest, best,
And bravest in us all.

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The flag—the nation rises up
From coast to coast to-day,
Saluting reverentially
Its colors bright and gay.
Beneath its stars the slave is free,
The starving ones are fed,
The weary exile finds at last
A shelter and a bed.

The flag—from old Nantucket's light
To Yukon's furthest crag,
We'll live for it and die for it,
Our great and glorious flag.
We'll cherish it until the breath
Of life from us departs,
For every day, the year around,
It's Flag Day in our hearts.

WHEN THE CALL IS SOUNDED

The thrill of martial music is felt in this poem by Lurana Sheldon, the author of many poems which have been published in the New York newspapers. It tells how the soldiers "from hill and valley, from mountain and plain," hasten to rally around the flag when they hear the huge call summoning them to duty.

THEY will come from the hill and the valley,
They will come from the mountain and plain;
From the deeps and the heights they will rally
At the sound of the bugle's refrain.
They will come in their youth and their beauty
With valorous daring and skill,
And all will be patriot duty,
And all will be patriot will.

Not once will the echo, repeating,
Ring emptily over the plain,
But, swelled with the voices of greeting,
Redouble the clarion strain.
From hearths that are shadowed with sorrow,
From homes that are happy and gay,
They will come at the summons to-morrow
To march to the heat of the fray.

The day when the war-cry is sounded
Not one will show vestige of fear,
But numbers in haste will be rounded
And all will be courage and cheer.
They will come from the mountain and valley,
A noble, invincible band,
To the Flag of the Free they will rally—
The Flag of their own Native Land!

THE FLAG

WHEN you see that flag of beauty,
Do you feel the call of duty?
Do you hear the bugle sounding in your heart?
When you see its colors blowing,
Does it set your spirit glowing
For your country, make you strong to do your part?
That Freedom may not perish
From the land that Freemen cherish,
Do your part!

THE HOUSE THAT JACK BUILT



THIS is the house
that Jack built.

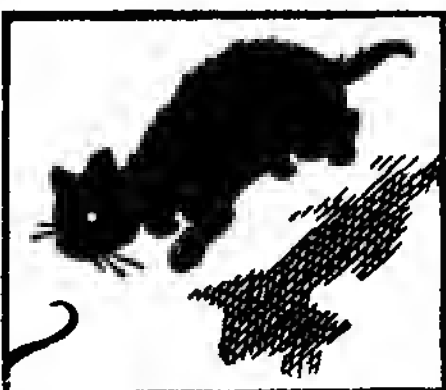
THIS is the
malt
that lay
in the
house
that Jack built.



THIS is the rat that ate the
malt
That lay in the house that
Jack built.

THIS is the cat
that killed
the rat that ate
the malt

That lay in the
house that
Jack built.



THIS is the dog
that worried
the cat
That killed the rat
that ate the
malt
That lay in the
house that Jack
built.

THIS is the cow
with the
crumpled horn
That tossed the
dog that worried
the cat
That killed the
rat that ate the
malt

That lay in the house that Jack built.



THIS is the
maiden all
forlorn
That milked the
cow with the
crumpled horn
That tossed the dog
that worried the
cat

That killed the rat that ate the malt
That lay in the house that Jack built.

THIS is the man
all tattered
and torn

That kissed the
maiden all forlorn
That milked the
cow with the
crumpled horn

That tossed the dog that worried the cat
That killed the rat that ate the malt
That lay in the house that Jack built.



THIS is the priest all shaven and shorn
That married the man all tattered
and torn



That kissed the
maiden all forlorn
That milked the
cow with the
crumpled horn

That tossed the dog
that worried the cat
That killed the rat that ate the malt
That lay in the house that Jack built.

THIS is the cock that crowed in the
morn

That wakened the priest all
shaven and shorn
That married the man all
tattered and torn

That kissed the maiden all forlorn
That milked the cow with the crumpled
horn

That tossed the dog that worried the cat
That killed the rat that ate the malt
That lay in the house that Jack built.



THIS is the farmer sowing the corn
That kept the cock that crowed in
the morn

That wakened the priest all shaven and
shorn

That married the man all tattered and
torn

That kissed the maiden all forlorn



That milked the cow with the crumpled
horn

That tossed the dog that worried the cat
That killed the rat that ate the malt
That lay in the house that Jack built.

LITTLE VERSES FOR VERY LITTLE PEOPLE

THERE was an owl lived in an oak:
Whiskey, whaskey, weedle!
And all the words he ever spoke
Were "Fiddle, faddle, feedle!"



A gunner chanced to come that road:
Whiskey, whaskey, weedle!
Says he, "I'll shoot you, silly bird!
So fiddle, faddle, feedle!"

ONE, I love; two, I love;
Three, I love, I say;
Four, I love with all my heart;
Five, I cast away;
Six, he loves; seven, she loves;
Eight, both love;
Nine, he comes; ten, he tarries;
Eleven, he courts; and twelve, he marries.

THERE was an old woman called
Nothing-at-all,
Who rejoiced in a dwelling exceedingly
small;
A man stretched his mouth to its utmost
extent,
And down at one gulp house and old
woman went.

BOW-WOW, says the dog;
Mew-mew, says the cat;
Grunt, grunt, goes the hog;
And squeak, goes the rat.
Chirp, chirp, says the sparrow;
Caw, caw, says the crow;
Quack, quack, says the duck;
And what cuckoos say, you know.

So, with sparrows and cuckoos,
With rats and with dogs,
With ducks and with crows,
With cats and with hogs,

A fine song I have made,
To please you, my dear;
And if it's well sung,
'Twill be charming to hear.

BOBBY SHAFT is gone to sea,
With silver buckles at his knee;
When he'll come home he'll marry me,
Pretty Bobby Shaft!

Bobby Shaft is fat and fair,
Combing down his yellow hair;
He's my love for evermore,
Pretty Bobby Shaft!

HO, my kitten, a kitten,
And ho, my kitten, my deary!
Such a sweet pet as this
Was neither far nor neary.

Here we go up, up, up,
Here we go down, down, down;
Here we go backwards and forwards,
And here we go round, round, round.

OH, who is so merry, so merry, heigh
ho!
As the light-hearted fairy, heigh ho,
heigh ho?

He dances and sings
To the sound of his wings,
With a hey, and a heigh, and a ho!

Oh, who is so merry, so merry, heigh ho!
As the light-hearted fairy, heigh ho,
heigh ho?

His nectar he sips
From a primrose's lips,
With a hey, and a heigh, and a ho!

THE dove says "Coo, coo, what shall
I do?
I can scarce maintain two."
"Pooh, pooh!" says the wren, "I have
got ten,
And keep them all like gentlemen."



DAINTY, diddlety, my mammy's maid,
She stole oranges, I am afraid.
Some in her pocket, some in her sleeve,
She stole oranges, I do believe.



HOW TO MAKE A SEE-SAW

A SEE-SAW is one of the simplest things to make, and a great deal of amusement can be obtained from it in the garden, not only by boys and girls, but by the grown-ups too.

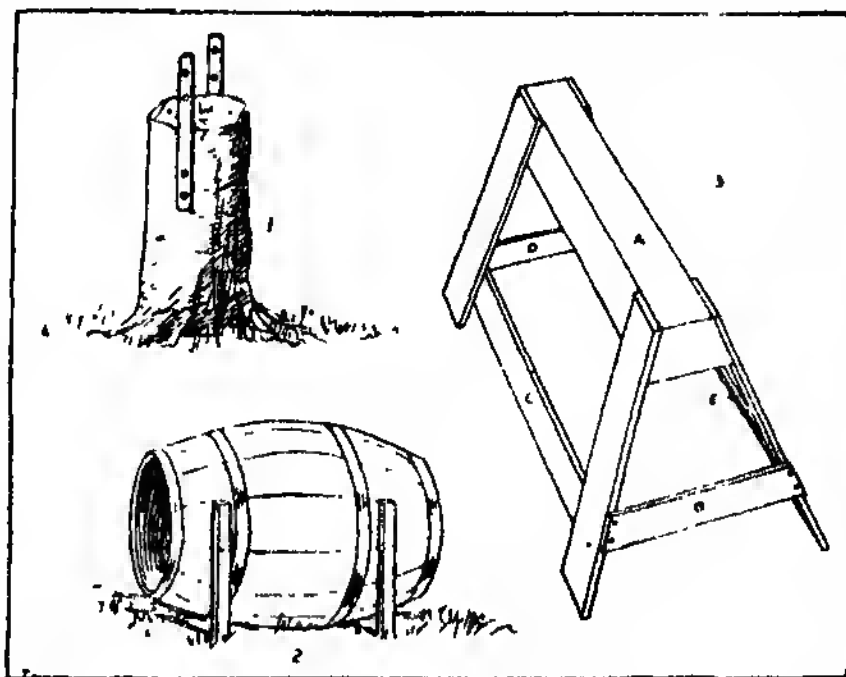
All we really need is a good stout plank of wood that will bear the weight of two people—one at each end—without bending, and some sort of a support upon which the plank may be placed, and which will act as a fulcrum, or pivot. For a see-saw is the simplest kind of lever, and, as we know, a lever has three parts. In the picture at the top of this page the trestle is the fulcrum, the lady is the weight, and the little girl is the power that has raised the lady. In a moment the lady will go down, when she will become the power, and the little girl will go up and be the weight.

The plank we must obtain from some woodyard. It should be of sound wood, about 1½ inches thick, 12 inches wide, and 10 or 12 feet long. It may be painted, or not, as we like, but it certainly must be planed very smooth. If we want to have a handle at each end for holding when we are sitting upon the plank and it is going up and down, we can easily make one. We simply fasten an upright batten of wood to the plank, with an iron angle, such as may be bought at any hardware store, in the way shown in the bottom picture on this page. It

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should be put in the middle of the plank's width, and should be about 18 or 20 inches from the end. Now we come to the fulcrum, or support, and here we may select almost anything that is most handy.

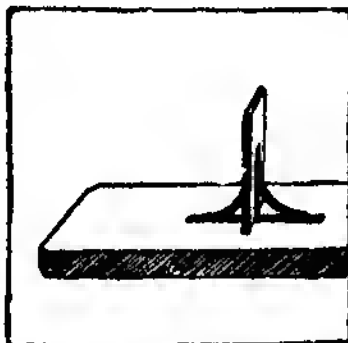
If there is a wide and sound stump of a tree that has been chopped down, standing about 2½ feet high, in some suitable position, it will serve our purpose admirably. To prevent the plank slipping off as it is worked backward and forward, we can smooth the sides of the stump and screw an iron angle at each side, as shown in picture 1. If no such stump is standing, but the trunk of a felled tree is lying on



DIFFERENT KINDS OF SUPPORTS

the ground, this, of course, does equally well; or even better, for the roundness of the trunk enables the see-saw to work better.

A barrel placed on the ground and secured with stakes, as shown in picture 2, makes a very good fulcrum. A mound of earth also will provide all that is necessary. If none of these are available, we may make a trestle like that for the see-saw in the picture at the top of this page. It can be made as shown in picture 3. We need a stout beam (A), 2 or 2½ feet long, 4 inches deep, and 4 inches wide at the bottom. It should slant off toward the top, along its whole length, to 3 inches, and any carpenter will make the beam this shape for us if we cannot do it ourselves. Then we obtain some wood



SEE-SAW HANDLE

suitable for the legs and supports, about 3 inches wide and $1\frac{1}{2}$ or $1\frac{1}{4}$ inches thick. We saw off four legs, say, $2\frac{1}{2}$ or $2\frac{1}{4}$ feet high, and screw these on to the beam, using five screws, as shown by the dots in picture 3. We should use long screws that will firmly grip the two pieces of wood; but they should not be very thick, or they may split the wood.

Then we saw off four pieces of wood, B, C, D, and E, and screw them to the legs for supports, as shown in the picture. All we now need to do is to place the trestle on the ground, drive in a little stake on each side to steady it—as shown in the picture at the top of the previous page—place the plank upon the trestle, and then see-saw as much and as often as we like.

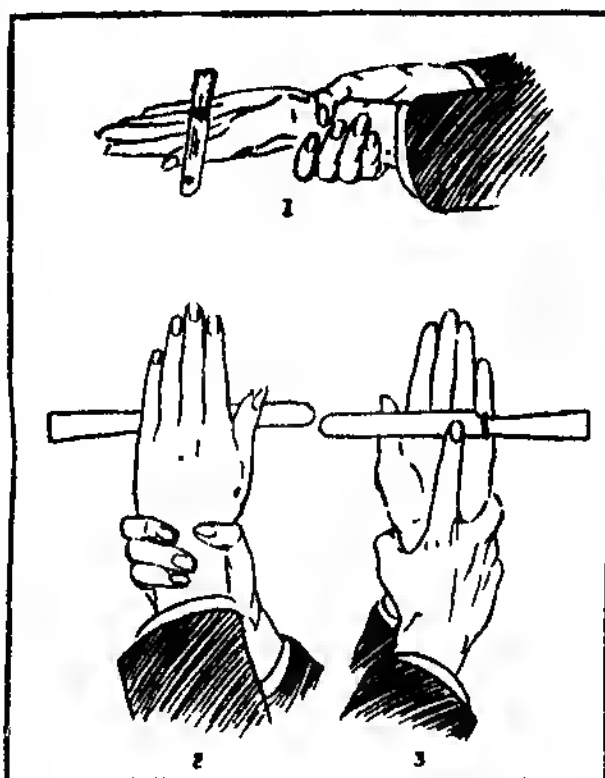
If two children are using the see-saw, the plank should be placed upon the support with half the plank on each side; but if a grown-up person is to be at one end, and a boy or girl at the other, then there should be a greater length of plank on the side upon which the child sits.

If the grown-up person at one end weighs 126 lbs. and is 3 feet from the middle of the swing, then the boy, if he weighs 42 lbs., to balance the grown-up person, must be 9 feet from the middle. If we know the weight of the two persons, we can always tell exactly at what distance from the middle they will balance each other, as the power at work depends on weight and on distance. Once get our see-saw and we can have great fun.

THE MYSTERY OF THE SUSPENDED KNIFE

AN amusing and simple trick that will greatly surprise all those who see it performed, unless they know the secret of how it is done, is that of the mysterious

knife. We take an ordinary dinner-knife, and place it on the palm of the hand, as shown in picture 1. Then, talking a great deal about animal magnetism and the wonders of attraction, and explaining that it is necessary to keep a firm grip on our wrist in order to concentrate the magnetism, we cleverly turn over the hand with the knife, and, holding it up, show the knife apparently suspended without being held, as in picture 2. If the trick is carefully performed, the spectators will be greatly mystified. The explanation is given in picture 3. In turning over the hand with the knife, we quickly stretch out the forefinger of the right hand, and hold the knife up with this, while the thumb and other three fingers continue to grip the left wrist. If we continue to talk, to divert the attention of the



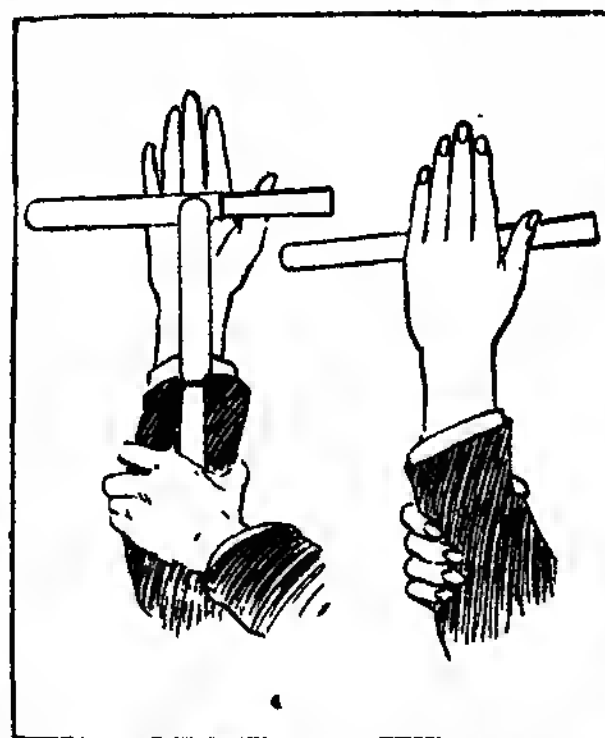
HOW THE KNIFE IS SUSPENDED

spectators, and do not hold up the knife too long at one time, it is quite unlikely that anyone will notice that only three fingers of the right hand are visible. If, however, they do suspect that we are supporting the knife, then we can offer to do the trick again, removing the right hand away from the wrist and placing it so that the fingers of that hand could not possibly touch the knife. What the audience then see is shown in picture 4. This trick looks even more mysterious than the other, and if it is cleverly and carefully performed, there seems to be no explanation of how the knife is suspended upon the palm of the left hand, for the audience can see no apparent means of support. It is, however, done quite simply, and the method of supporting the knife is shown

in picture 5. The thumb of the right hand holds the second knife close against the left wrist and palm, and this keeps the first knife

in position. Of course, it is more difficult to perform this trick than the first one, as there is more chance of the spectators discovering the trick, owing to the difficulty in concealing the second knife. With a little practice, however, it may be done quite easily. We should, of course, have one or two knives on the table before us, and should pretend to take some trouble in selecting a good one. "This one," we can say, "is not magnetic enough." Then we take up another and try it, and so on. This deceives the audience and distracts their attention, and enables us to pick up the second knife to support the other. We shall naturally see to it that only blunt knives are used, and

should there be any difficulty in obtaining suitable knives, we may use any other flat, long, and narrow objects that are not too



ANOTHER METHOD OF SUPPORT

heavy. Ordinary twelve-inch boxwood rules are very good objects with which to perform the trick, and if these are not available, ordinary flat sticks of wood are almost equally good. It is always wise to practise such a trick a good deal when we are by ourselves before trying to astonish our friends, as so much depends upon quickness and neatness in our movements, otherwise the method of supporting the knife will be noticed. Although, as already stated, we should not hold the knife up too long at one time, or our friends may discover the secret of the trick, yet we can show them the wonderful performance over and over again, taking the greatest care always to keep the second knife that supports the other well out of the sight of all the people who are watching.

SOME CLEVER BALANCING FEATS

THERE are a number of interesting balancing feats which cause great astonishment to many who see them, and which seem very difficult indeed to perform and yet are really simple. To those, however, who know a little science, and understand the meaning of the phrase, *centre of gravity*, they do not seem at all wonderful, for the true explanation is perfectly clear.

Picture 1 on this page shows a balancing feat that may seem difficult, but is so easy that any boy or girl can do it. We take a piece of wood about ten or twelve inches long, and into it, near one end, we stick the blades of two knives, as shown. With a little adjustment, according to the size and weight of the knives and the length of the wood, we can balance the tip of the wood on the thin edge of a wine-glass or tumbler.

A somewhat similar experiment is that shown in picture 5, where a stick is balanced with perfect ease upon the finger. Some little distance from the top we insert two knives or two forks, and by means of these the stick is made to balance perfectly.

Rather more difficult is the experiment which we see in picture 2. In this we are able to spin a quarter upon its edge on the point of a needle. First of all we take a bottle, such as a vinegar bottle, with a cork in it, and into this cork we push a needle, head downward, so that the point is sticking up. Now we take another cork, and in the end make a slit, into

which we fix a quarter. Then into the sides of the cork we stick two ordinary table-forks, at an angle. We are now ready to try the experiment. We put the edge of the quarter upon the point of the needle, as shown in the picture, and if the forks have been properly arranged in the cork the quarter will balance easily. The coin, with the cork and forks, can then be spun round and round on the point.

Perhaps we may like to make a balancing toy which we can keep to show to our friends. Picture 3 shows such a toy. On stout card-board we draw a prancing horse, with its head and legs very much forward. Across the back, and flowing out under the body in the direction of the tail, is a sash or rug, and at the end of this we fix a flat weight of some kind and cover it with paper. When we stand the horse upon its hind legs upon the edge of a table, as seen in the picture, it stands upright and firm.

Another interesting balancing feat, that appears very wonderful, can be performed with a pail of water, as shown in picture 4.

Upon a table, a stick, A B, is laid, and a pail is hung upon this in the manner indicated. The handle, c, is at an angle to the pail, and the edge of the table should reach out just beyond the middle of the pail. To keep the pail in position a stick, D E, is placed in the pail, one end, E, being against the angle where the bottom of the pail joins its side. The stick must also touch the top edge of the pail, and its other end touches the stick A B at D, where a notch is cut to prevent it slipping. The pail is now perfectly balanced, and water may be poured into it until it is full.

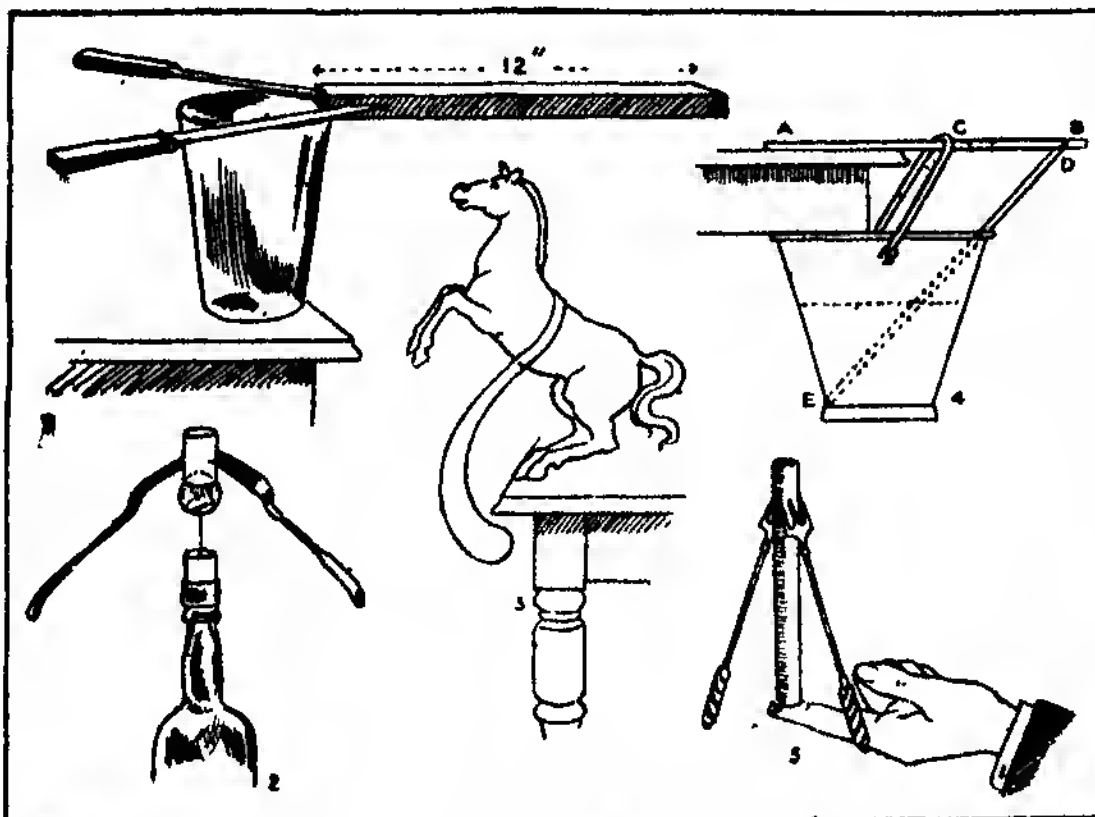
The explanation of all these balancing feats lies in the secret of the centre of gravity. The centre of gravity of a body is the point at which the whole weight of the body may be said to be collected, and if a body be supported at its centre of gravity it will keep perfectly balanced.

In the first experiment, for instance, the wood and two knives are, to all intents and purposes, one body, as the weight of the knives

is greater for their length than that of the wood, the centre of gravity of the whole is not midway between the end of the knives and the extreme end of the stick, but much nearer the knives. Hence the wood will balance perfectly, as shown. The experiment shown in picture 5 explains why it is very much easier for a man to carry two parcels weighing, say, four-

teen pounds each, one in each hand, than it is for him to carry one parcel of twenty-eight pounds in one hand. The two parcels, one on each side, balance one another, and the man is able to walk upright. But when he carries the twenty-eight pounds in one hand all the weight is on that side, and it is necessary for the man to bend his body the other way, so that the centre of gravity of himself and the heavy parcel combined may be in a right position to keep him from falling.

A boy was once carrying a heavy parcel in his right hand, when the string broke and the parcel fell to the ground. At once the boy toppled over to the left. He had been leaning to the left owing to the weight on his right, but as soon as the parcel fell, the centre of gravity, which had been correct when there was a heavy weight on one side, was in the wrong position, and the boy, being top-heavy, fell over. We can see how this happened if we remove one of the forks in the experiment shown in picture 5, when the stick will at once fall over on the other side.



EXPERIMENTS THAT SHOW THE WONDERS OF BALANCE

HOW TO FEEL THE PRESSURE OF THE AIR

THERE is a very simple scientific experiment by which the pressure of the atmosphere may be felt, and which will, at the same time, cause a great deal of surprise and wonder to those who perform or see the experiment for the first time.

We take a board measuring about two feet in length by four or five inches in width, and, say, a quarter of an inch in thickness. This we place upon a table, with about six inches projecting beyond the table, and cover it with an opened newspaper, as shown in the picture on this page, taking care to smooth the paper down all over, so that it may lie as flat as possible on the table.

Now, clenching the hand, we bring it down with a sharp, hard blow upon the projecting wood. One who has never tried the experiment before naturally expects that the board will be knocked down off the table. But no matter how hard we may strike, the board will not go down.

The projecting end may be broken, but the board itself cannot be moved. And yet, if we press gently upon the end with one finger, the board can easily be pushed to the floor.

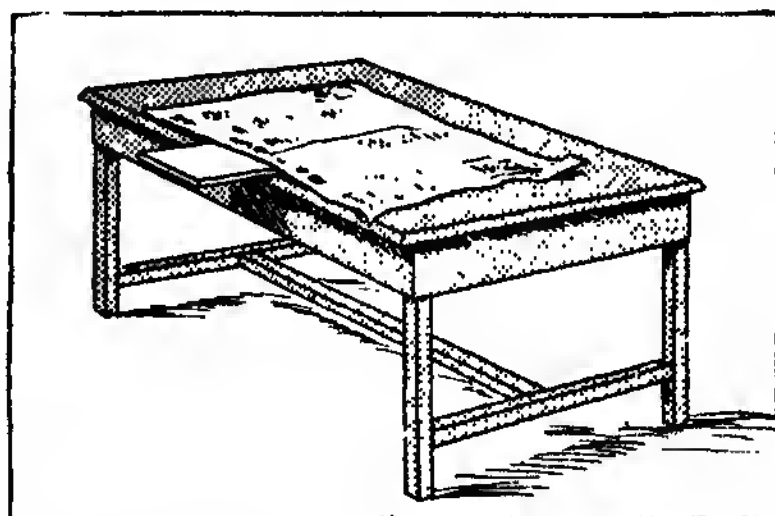
The explanation of the apparent mystery is to be found in the scientific fact of the pressure of the atmosphere. The air presses upon everything on the surface of the earth with a force equal to fifteen pounds on every square inch.

But this pressure is unnoticed by us in ordinary circumstances, because it works equally in all directions.

When, however, the pressure of the air is removed from one side of a body, it is felt with great force on the other side. It is this removal of the air-pressure from one side that happens when we strike the projecting board.

The blow is given sharply, and the air has no time to rush in between the table and the newspaper. The result is that the pressure of fifteen pounds to the square inch is exerted

in a downward direction only, upon the surface of the newspaper, and when we strike the end of the board this pressure is felt just as though the other end of the board were held down by heavy weights. It must, of course, be understood that the blow is to be short and sharp, the fist being removed from the board instantly. If the blow is a prolonged one, and the hand rests upon the



THE BOARD THAT WILL NOT MOVE

board for more than a moment, it will go down, because that is the same as deliberately pressing upon the board. The air has no time to rush in under the board, and the pressure of the atmosphere then being the same both below and above the board, there is nothing to counteract our blow as is the case when we strike sharply and quickly, and the air-pressure is exerted on the top of the board only.

CARDS THAT TELL ANY NUMBER THOUGHT OF

IF we take six visiting cards, and copy on to them the six sets of figures that are printed below—one set on each card—we shall be able, with the six cards that we have made, to tell any number that a friend may have thought of.

We ask the friend to think of a number, and then we show our six cards, desiring that he will point out on which of these cards the number thought of appears. In a moment we tell him the number, much to his astonishment.

The explanation is very simple. We merely add up the figures that appear on the top right-hand corners of the cards upon which his number appears, and the total that results is the number thought of. Thus, suppose that our friend thought of the number 47. It is on the first, second, third,

fourth, and sixth cards. The figures in the top right-hand corners of these are 1, 4, 8, 2, and 32, which, added together, make 47—the number thought of. We can guess people's ages in this way, and can get a great deal of fun from so simple a set of figure cards.

Some people know of figure cards by which a number can be guessed, but these are usually arranged so that the top left-hand figures have to be added to give the solution, whereas here the right-hand numbers must be added. If any of our friends have seen figure-guessing cards

before, they will at once say that they can do the thought-reading as skilfully as ourselves. We let them try, and by adding up the left-hand figures they find that they are hopelessly wrong every time.

3	5	7	9	11	1
13	15	17	19	21	23
25	27	29	31	33	35
37	39	41	43	45	47
49	51	53	55	57	59

5	6	7	18	12	4
14	15	20	21	22	23
28	29	30	31	36	37
38	39	44	45	46	47
52	58	54	55	60	13

9	10	11	12	18	8
14	15	24	25	26	27
28	29	30	31	40	41
42	43	44	45	46	47
56	57	58	59	60	18

8	8	7	10	11	2
14	15	18	19	22	23
28	27	30	31	34	35
38	39	42	43	46	47
50	51	54	55	58	59

17	18	19	20	21	18
22	23	24	25	28	27
28	59	80	31	43	49
50	51	52	58	54	55
56	57	58	59	60	81

33	34	35	36	37	32
38	39	40	41	42	43
44	45	46	47	48	49
50	51	52	58	54	55
56	57	58	59	60	48

CURIOUS WAYS OF PEELING AN ORANGE

THERE are various ways of peeling an orange which give very artistic effects, and which can be done quite easily with a little practise. Perhaps the simplest of such methods of cutting the peel of an orange is that shown in picture 1.

With a sharp knife we cut a number of slits from the top to about two-thirds the distance down the orange, and then

gently and carefully pull away the peel all round from the white of the orange. We take the orange itself away, and open out the gores, or cuts, as shown in picture 2, and we have a water-lily. If a small light be put in the middle and be lighted, the effect is very pretty. A more elaborate way of cutting the peel of an orange gives the beautiful result shown in picture 5. First of all, we cut lines all round the orange as in picture 6; then on each side of these cuts, and about three-sixteenths of an inch away, we must cut other lines parallel to those already made, so that we now have the orange with a series of triple cuts as shown in picture 7. These cuts must now be joined up at the top and bottom of the orange in the manner shown in picture 8, and then across the middle, or equator, of the orange we cut the peel between the lines as is shown in picture 9. All



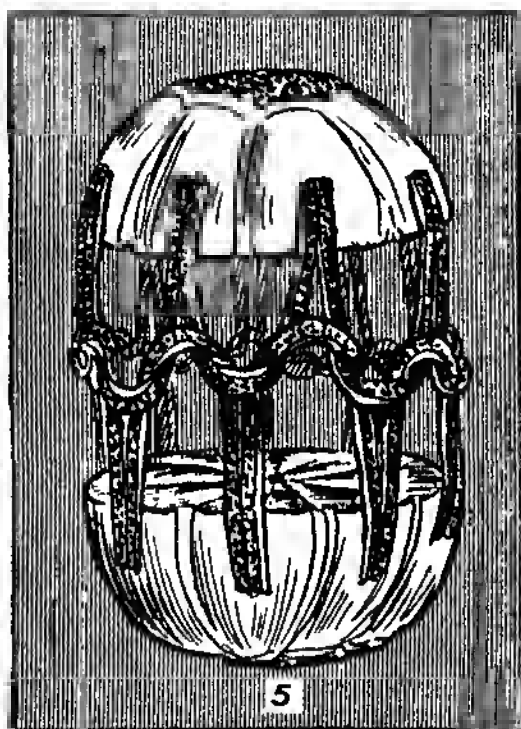
1, 2, the orange cut to make a water-lily; 3, 4, to make a rose-bowl.

of the ribbons. Great patience is necessary, but at last we get the figure shown in picture 5; and if we are careful we can remove the orange from inside, piece by piece, or, if we do not wish to do this, we can let it remain and wither

with the peel. Another artistic method of peeling an orange is to cut it as shown in picture 3, and then to pull back the peel

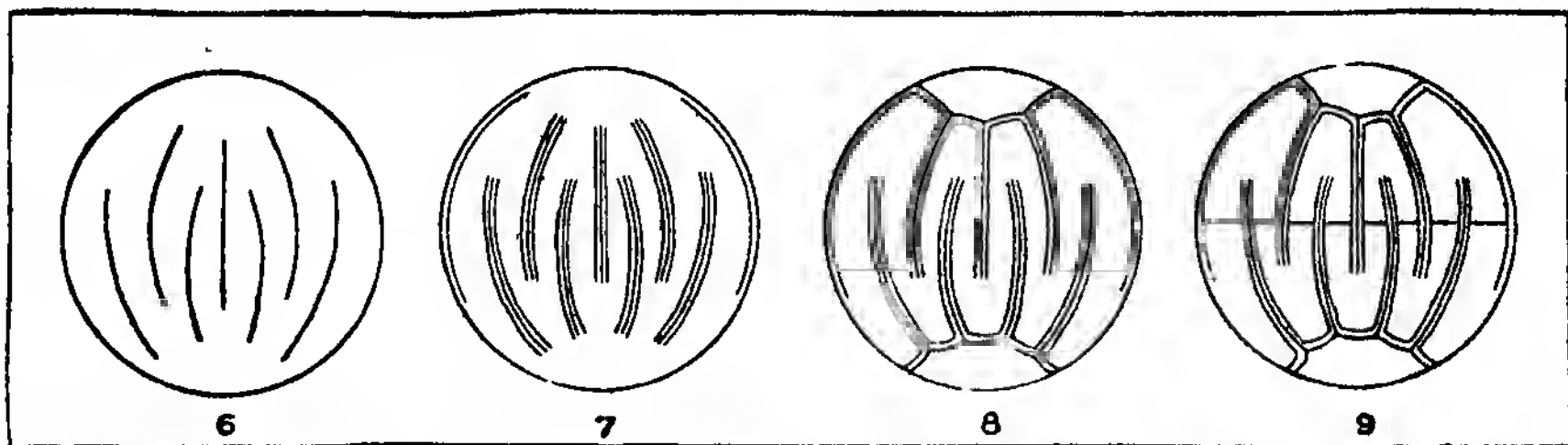
carefully and release the orange so that we get two cups of the form which we see in picture 4. In cutting and peeling oranges in these fancy

ways, one or two points must be remembered and carefully observed. First of all, in choosing our orange we should select a large one, not over-ripe and not under-ripe. It should have a smooth skin, not too thick, and without blemishes. Then for the cutting we must have a really sharp knife with a fine point, and in cutting we must not cut too deeply. The cuts should be clean, so that there are no jagged edges to the ribbons, and great care should be exercised so that we may not cut across places or lines that should not be cut. If we cut wrongly in making the design of picture 5, the whole scheme of cutting will be spoiled, and the peel will not fall into the proper loopings as they are shown in the picture. But with a little care and



5. An artistically peeled orange.

not fall into the proper loopings as they are shown in the picture. But with a little care and



The different stages of cutting the peel of an orange to produce the artistic effect shown in picture 5.

is now ready, and with a small, blunt pen-knife we gently raise the peel everywhere from the body of the orange, taking care not to break any

patience any clever boy or girl can become quite expert in fancy orange peeling, and will soon be able to invent new and artistic designs.

A FILTER THAT A BOY CAN MAKE

IT is always well to filter our drinking-water, especially if we live in the country, and there is a very simple form of filter that any boy or girl can make with little trouble. We take an ordinary garden flower-pot eight or nine inches in diameter at the top, and after thoroughly washing it we stop the hole with a piece of sponge, which must not fit too tightly. Then we put in a layer of charcoal, about two inches deep, and above this a layer of

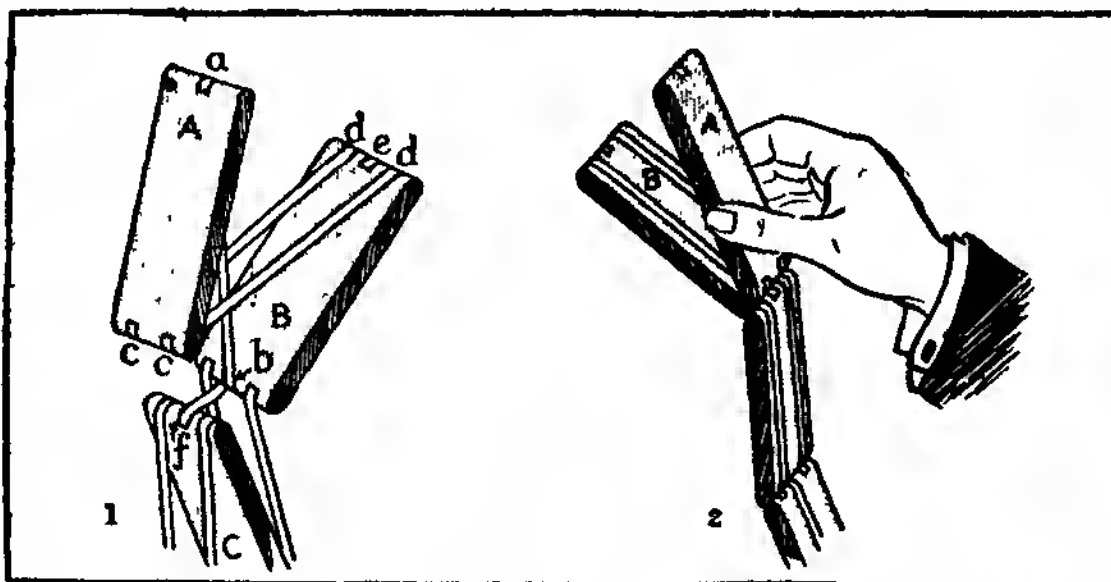
clean sand, with a layer of clean, coarse gravel three inches thick on top. The filter is now quite ready for use. We fix it up over a vessel of some kind, and let the water which we want filtered run through the various layers in the flower-pot. Of course, from time to time the filter wants cleaning out thoroughly, but this is done quite easily, and we shall find that, simple as is this little apparatus, we have a thoroughly effective and serviceable filter.

THE MYSTERIOUS JACOB'S LADDER

A VERY old puzzle, which is easily made, is that known as the Jacob's ladder. It consists of an ingenious arrangement of little pieces of wood and tape, so fastened together that by holding the top piece of wood and alternately inverting it and bringing it back to its original position, another of the pieces of wood is apparently constantly falling from the top to the bottom of the ladder. To make one of these clever little toys, we first of all get some suitable wood from which to cut the pieces we need, and for this purpose nothing better could be obtained than an ordinary cigar-box. We decide how many steps our Jacob's ladder shall have, and although it may consist of any number, great or small, an average number is ten. A greater number becomes rather unmanageable.

The pieces of wood must all be of exactly the same size—for example, $3\frac{1}{2}$ inches by 2 inches; and when they are cut out with a fretsaw they should be nicely smoothed, and the top and bottom angles rounded slightly by rubbing with sandpaper.

Ordinary white or pink or black tape about $\frac{3}{4}$ or $\frac{1}{2}$ an inch wide is used for joining the pieces of wood, and the method of fitting them to the



METHOD OF FIXING THE TAPES & HOW TO WORK THE LADDER

wood is shown in picture 1. Each piece of wood has three tapes, and all the tapes should be of the same length—about 5 inches—so that the ends can just pass round with enough length to glue down on the wood as seen in the picture. There is a centre tape and side tapes for each piece of wood, and the arrangement is the same in each case, however many steps the Jacob's ladder may have. The centre tape *a* on the board *A* is fastened on the far side of the board

B at *b*. The side tapes *c c* on *A* are fastened on the other side of *B* at *d d*, while the middle tape *e* on the board *B* passes on to the board *C*, and is fastened at *f*, and so on throughout the entire length of the ladder. When all the tapes have been glued, we hold

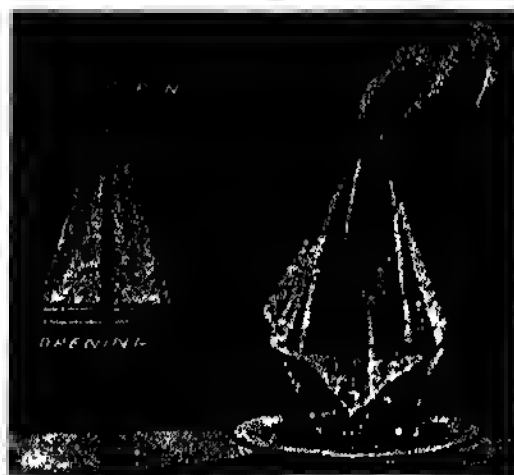
the top little board *A* as in picture 2, and *B* seems to fall to the bottom; then we invert *A*, and again the board next to it seems to fall to the bottom. *A* is returned to its original position, and the board drops again, and so on without end. The whole thing is a clever optical illusion. This toy is said to have been invented in Japan many hundreds, if not thousands, of years ago, and large numbers of Jacob's ladders are sent from Japan every year for sale in the cities and towns of Europe and America.

A GOOD CONJURING TRICK WITH NUTS

THERE is an excellent conjuring trick that can be performed with very little preparation or apparatus, and if it is practised once or twice until skill is acquired, it will greatly mystify the spectators.

We hand round for the inspection of the audience an empty dessert plate and a clean pocket-handkerchief. These can be handled by anyone who likes to prove that they have no secret pockets or recesses. We now place the empty plate on the table, spread over it the pocket-handkerchief, and then, after making a few mysterious passes with the hand or a wand, we raise the handkerchief and shake out of it upon the plate a number of sweetmeats or nuts.

This is the explanation of the trick. We make a small triangular bag, as shown in the first picture, by sewing together two triangular pieces of linen or calico, and in the two hems on each side of the opening we sew straight pieces of watch-spring, taking care that in each case the spring goes the whole length of the hem. These springs, if they are flat, will close the opening of the bag, and keep it closed unless force is used to open it. A pin, bent to a hook, is put through the apex of the bag.



THE TRICK BAG

Nuts or sweetmeats are now placed in the bag, and the spring closes the mouth, so that when the bag is suspended they will not fall out. Having prepared the bag in this way, we hang it by the hooked pin on the side of the table that is away from the spectators, this being done, of course, in advance, before they sit down, so that they know nothing about it.

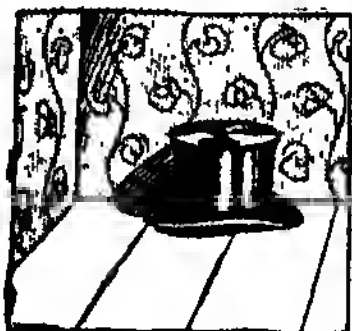
After showing the empty plate to the audience, we place it on the table near the edge where the bag is suspended, and in spreading the handkerchief over it we see that part of it hangs over the edge of the table where the hooked pin is. Then in picking up the handkerchief we dexterously pick up with it the bag, the handkerchief falling all round so as to hide the bag. The rest of the trick is simple. We shake the handkerchief with a few

vigorous jerks, and the impact of the nuts or sweets parts the springs, which are not very stiff, and allows the objects to fall out on the plate. The bag can then be skilfully dropped behind the table, which should, of course, have a thick cloth upon it, reaching down to the floor, so as to effectively hide the bag. There are few conjuring tricks so easy to perform, and yet so surprising in their effects.

HINTS AND TRICKS FOR ODD MOMENTS

HOW HIGH IS THE HAT?

OUR eyes play us many tricks, and they often deceive us as to the size or height of anything. The apparent height of a hat, for instance, may be very much greater, or it may be less, than it really is. There is an interesting

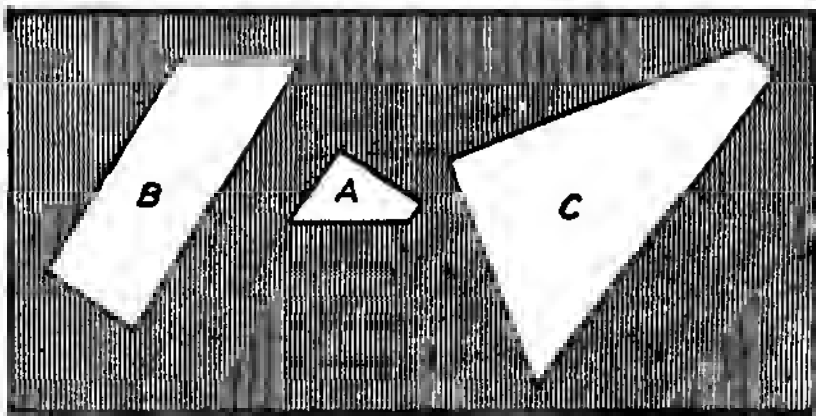


experiment by which we may prove this to ourselves. We should place some mark on a wall to show how high up we think the top of a tall silk hat will come when the hat is stood on the floor against the wall. It seems a very simple and

easy thing to give a fairly accurate estimate, but we shall probably be hopelessly out. Let us mark the estimated height first, and then see how accurate we are, by placing the hat against the wall, as shown in the picture. It will spoil the amusement and stop the surprise if we say here whether the estimate is likely to be greater or less than the real height.

TO FORM A SQUARE

CUT out ten pieces of card—two of the size and shape of A, four of B, and four of C—and then arrange them in such a way that they will form a perfect square. When they are jumbled up it seems impossible that they could



be made into a square, and when we try to put them together it seems equally impossible; but with perseverance we shall probably be successful. If we are not, and the task is beyond us, we can turn to the solution which is given in the next Little Book of Entertainment.

A WHIRLPOOL IN A TUMBLER

IF we fill a tumbler with water and throw upon the surface some thin shavings of camphor, these will instantly begin to move about



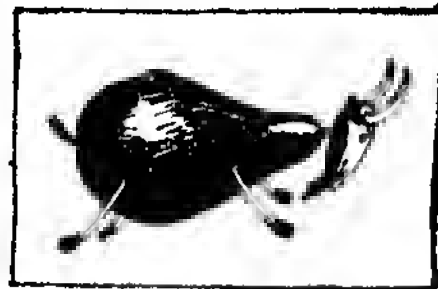
and give the appearance of a miniature whirlpool, the movement continuing for some time. But if we now dip into the water anything that is greasy—as, for instance, the end

of a pencil that has been rubbed with oil—the particles of camphor will dart to the sides of the glass, and the motions will cease immediately.

A GOAT MADE FROM A PEAR

HERE is a picture of a goat made up from a pear with the aid of four matches, an almond, and some raisin-stalks. We stick the matches into the pear as shown, then we get a well-shaped almond from its shell to form the head, and into this we stick curved

raisin-stalks for horns, two or three stalks for a beard, two short pieces of stalk for ears, and the whole is fixed to the end of the pear by means of a stalk or piece of match, thus forming the neck of the goat. A hole is cut on each side of the almond for the eyes. With



a little ingenuity and practise we can make other animals from the different kinds of fruit.

CURIOUS WAY OF MEASURING A TREE

SOME of the natives of South America have a curious way of measuring the height of a tree or tower. They turn their backs to the tree, and walk away from it until they



come to a spot where, keeping their backs to the tree, they can, by stooping down and looking between their legs, see the top of the tree. Then they make

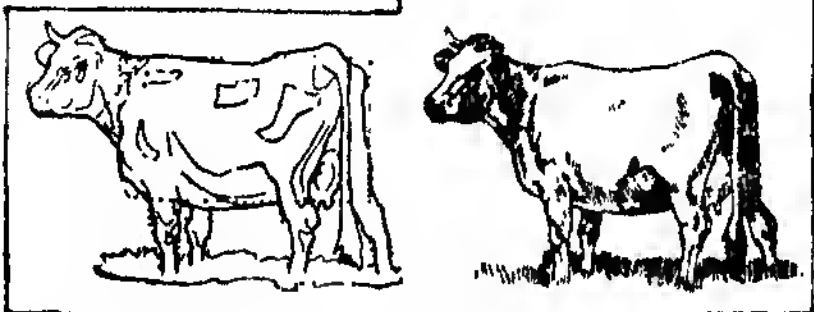
a mark on the ground, and the distance from this mark to the base of the tree is, roughly, the height of the tree. Any boy can thus tell within an inch or two the height of a tree or building.

WRITING WITH INK ON WOOD

IF we have ever tried to write with pen and ink upon ordinary wood, we know how difficult it is. Directly we have written the words the ink begins to run, and if our pen has been well tilled the words become, in a few moments, a mere blur, no matter how well they may have been written. To avoid this running of the ink, there is a very simple precaution which we can take, and that is to rub the wood with powdered resin, when we shall be able to write upon it with ink quite easily and well.

A SIMPLE WAY TO DRAW A COW

HERE is a simple way of drawing a cow. We begin by making a rough pencil outline of the shape of the cow, as in the first picture, getting the proportions correct. Then we begin to fill in the details of the animal, as in the second picture, and it will be found that the rough outline first drawn is a great help in making our sketch. When we have the cow penciled in completely, we ink over the lines that are to remain, then rub out the pencil-marks, including the original framework, and if we have done our work well we have a drawing something like the third picture here.



VERSES MADE WITH FIGURES AND LETTERS

WRITERS of verses have shown a great deal of ingenuity in using for their rhymes words that can be expressed by figures or by single letters, which, when pronounced, give the sound, either exactly or almost exactly, of the words represented. A great deal of amusement may be obtained on a wet evening, when we have to remain indoors, by gathering a party round the table with pencils and paper, and seeing who can, in a given time, make up the best rhymes in this way. The examples given here will show how the letters and figures are worked into the lines. The first little poem is a very good specimen of the use of single letters as a substitute for actual words.

The Chinaman praiseth his T's,
The mandarin praiseth his Q;
The gardener praiseth his turnips and P's,
But I praise U.

The mariner loveth the C's,
The bagatelle-player his Q;
The husbandman loveth his cattle and B's,
But I love U.

The foolish have need of the Y's,
The actor needeth his Q;
The pilot hath need of two excellent I's,
But I need U.

The hunter seeketh the J's,
The shepherd seeketh his U;
The college boys seek their final B.A.
But I C Q.

Here is an example of verses in which double letters are used all through for the rhyming words. This is more difficult to arrange. The double Y, of course, stands for 'Wise' and so on.

There is a farmer who is Y Y
Enough to take his E E,
And study Nature with his I I,
And think of what he C C.
He hears the chatter of the J J,
As they each other T T,
And sees that when a tree D K K
It makes a home for B B.

A yoke of oxen he will U U,
With many whoas and G G,
And their mistakes he will X Q Q
When ploughing for his P P.

He little buys, but much he sells,
And therefore little O O;
And when he hoes his soil by spells,
He also soils his hose.

This little poem has all the figures from one to ten, with the single exception of the figure 5, worked into it in a very clever way.

Astronomy is 1-derful,
And interesting, 2
The ear 3 volves around the sun
Which makes a year 4 you.

The moon is dead and calm,
By law of phy-6 great;
It 7 where the stars alive
Do nightly scintil-8.

If watchful Providence be-9
With good in-10-tions fraught,
Did not keep up its grand design,
We soon should come to 0.

Astronomy is 1-derful,
But it's 2 mighty 4
1 man 2 grasp, and that is why
I'd better say no more.

Of course, in the third line of the second verse the "h" is omitted by writing "It 7" for "It's heaven."

Here is one of the nonsense rhymes called Limericks in which figures are very cleverly worked in to represent syllables.

There was an archbishop named T8,
Who dined with a friend at 8.8,
But, sad to relate,
I'm unable to state
What T8's t8-à-t8 8 at 8.8.

Another limerick in which the figure 8 is introduced in a very similar way is this.

They dined all alone at 8.8,
On oysters they dined and 8 8;
And he asked his dear K8
To tell him his f8
When they 8 t8-à-t8 at 8.8.

Here is another verse in which letters are used to take the place of a word.

A budding author, something new
Submitting, signed himself X Q;
The editor the paper read,
And begged he might be X Q Z.

Another little verse was headed "UCIDK," and, after puzzling over this title for some time, the editor to whom it had been sent read the verse, which was as follows:

Surely, good sir, you follow me?
It is as plain as A B C;
Repeat it in a treble clef,
For I am rather D E F.

The title was, of course "You see I decay."

Perhaps one of the best poems in which letters are used for words is the following, which is entitled "A Maid of R K D."

A dainty maid of R K D
Is F E in her bower;
Smart as U C A honey-B;
And sweet as N E flower.

Does she S A herself 2 please,
X Q Q the little miss,
She sings an L E G 2 T T,
Or blows an M T kiss.

"B mine," I say, "U bonny J,
B4 U R mine J. (my knell);
When U R gay, my hopes D K,
In T-sing U X L."

Without ado she takes the Q,
Her I J B9 and B D;
"O, sir, I do not N V U,
I C U R so need E."

"O F E, U I C R true,
Y need I C Q less?
I'll never D V 8 from U,
But end my cares with 'S' (caress)."

AMUSEMENT WITH STOPS AND COMMAS

THE little commas and periods, and other similar signs that we see scattered about this page, and the pages of all the books that we read, do not seem very important. Yet, without these, it would very often be quite impossible for us to know what a writer meant.

Some sentences and paragraphs, indeed, can be made to have two exactly opposite meanings, according to how the stops are put in, and a good deal of amusement can be got if a few friends sit round a table, each having before him a paper and pencil, and try to punctuate correctly some of these rather difficult sentences. The sentences and verses given on this page may be used for this purpose.

SENTENCES THAT NEED STOPS

Here is a very startling statement:

King Charles the First walked and talked half an hour after his head was cut off.

We might doubt the accuracy of this, but when we know that there should be a semicolon after *talked*, and a comma following the word *after*, then the meaning is quite plain:

King Charles the First walked and talked; half an hour after, his head was cut off.

Many of us know the little rhyme:

Every lady in this land
Has twenty nails upon each hand
Five and twenty on hands and feet
All this is true without deceit.

We wonder how it can be true, till it is properly punctuated in this way:

Every lady in this land
Has twenty nails; upon each hand
Five, and twenty on hands and feet.
All this is true without deceit.

Here is a sentence that looks like a mere jumble of words:

That that that is is that that is not is not that that that is not is not. that that is is is not that so.

It should be punctuated in this way, and the words in italics should be emphasized:

That *that* that is, is *that* that is not, is not; that *that* that is not, is not *that* that is, is. Is not that so?

When a gentleman made the remark to his friend, "Time flies you cannot they pass too quickly," he was not talking about the passing of time, but about the timing of flies. A semicolon after *cannot* makes the sentence clear.

THE INSPECTOR AND THE MAYOR

A Prussian school-inspector called one day upon the burgomaster, or mayor, of a small town, and asked him to come on a tour of inspection of the schools in the district. The burgomaster was not anxious to go, and the inspector heard him mutter to himself: "What is this donkey here for again?" At the first school, the inspector said he would like to examine the children in punctuation. "Oh, bother that!" said the burgomaster, anxious to get on to the next school. "What do commas and such trifles matter?" But the inspector insisted, and, writing a sentence on the board, he asked a boy to read it, which the lad did as follows: "The burgomaster says the inspector is a donkey." Then, putting commas after the words *burgomaster* and *inspector*, he asked another boy to read the sentence, thus: "The burgomaster, says the inspector, is a donkey."

In this rhyme, to make sense, a semicolon should be placed after the first noun in every line except the last of each verse:

I saw a peacock with a fiery tail
I saw a blazing comet pouring down hail
I saw a cloud all wrapt with ivy round
I saw a lofty oak creeping on the ground
I saw a beetle swallowing up a whale
I saw a foaming sea brimful of ale
I saw a pewter cup sixteen feet deep
I saw a well full of men's tears that weep
I saw wet eyes in flames of living fire
I saw a house as high as the moon and higher
I saw the glorious sun at deep midnight
I saw the man who saw this wondrous sight.

I saw a pack of cards gnawing a bone
I saw a dog scated on Britain's throne
I saw King Edward shut up in a box
I saw an orange driving a fat ox
I saw a butcher not a fortnight old
I saw a greatcoat all of solid gold
I saw two buttons telling of their dreams
I saw my friends who wished I'd quit these themes.

Some years ago a London news agency received a cablegram from its correspondent in Australia which read as follows:

"Influenza extensively prevalent Wales Victoria numerous deaths Bishop Adelaide found dead sea-serpent sixty feet Coffin Bay."

This was published in the newspapers as three separate items of news to the effect that influenza was very prevalent in New South Wales and Victoria; that the Bishop of Adelaide had been found dead; and that a great sea-serpent, sixty feet in length, had been seen in Coffin Bay.

As a matter of fact the bishop was not dead, and it was he who was supposed to have found the remains of a dead sea-serpent lying on the beach at Coffin Bay sixty feet long.

STOPS THAT COST MONEY

Some years ago, the blunder of an American clerk, in putting a comma in the place of a hyphen, cost the United States nearly \$2,500,000. A duty was to be put on certain goods going into the country, and among those to be allowed in free, were "all foreign fruit-plants," meaning young fruit-trees for planting. In copying this part of the Bill for Congress, the clerk made it read: "all foreign fruit, plants," and so on. The result was that for a year, until Congress could set the mistake right, all kinds of fruit were allowed into the United States free of duty.

A wealthy Frenchman left a large sum of money to his two nephews. Each expected *two* hundred thousand francs, but the executors said they were entitled to only *one* hundred thousand. The nephews pointed to a sentence in the will which read like this: "A chacun deux cent mille francs," meaning, "To each two hundred thousand francs"; but the executors pointed to a small apostrophe between the *d* and the *eux* of *deux*, making the sentence read: "A *chacun d'eux cent mille francs," which means, "To each of them a hundred thousand francs." The nephews, however, got two hundred thousand francs each, the court deciding that the mark was a smudge, and not an apostrophe.

CONTINUED ON PAGE 5917.

BIRDS THAT LIVE INSIDE THE EARTH



THE KINGFISHER AND ITS HOME, SHOWING THE LONG BURROW IN THE RIVER-BANK



A SAND-MARTIN'S HOME AS IT APPEARS WHEN THE CLIFF IS CUT AWAY

The Book of NATURE



Two peeps into a sparrowhawk's nest, showing the eggs and the young birds hatched from them.

THE HOMES OF THE BIRDS

THE CLEVEREST BUILDERS IN THE WORLD

NOTHING pleases a business man more than to be able to put up on his sign-board the announcement, "Established 100 years." It shows that his business must have been well conducted, and that the firm is a respectable one, or it would not have lasted so long. Well, there is a little colony of blue-tits, or tomtits, on a tree near Stockton-on-Tees, in England, which, if they had printed announcements, would be able to put on their sign, "Established over a century." For a hundred years this family of blue-tits has nested, generation after generation, upon that very tree, until its members ought to be included among the aristocratic families.

Such a period must represent from fifteen to twenty or more generations of blue-tits, a very long record indeed. The same number of generations in our own families would carry us back some six hundred years, and there is not a single person in the United States who can say that his family has been in the same home for that length of time. The long tenancy of these little blue-tits reminds us that, where the conditions are favorable, where the people are kind and do not interfere, where the food supply is liberal, the birds go on building and rearing their young.

The fact that the birds live in the same kinds of nests for so long might,

CONTINUED FROM 5666



at first sight, seem to contradict the idea that all Nature is progressing, that all members of the animal family make their conditions of life fit the conditions in which they have to live.

But where altered circumstances demand new methods, the birds are never lacking in cleverness, never unable to adapt themselves to the new conditions. When birds prosper in the old way, we may know that there is no cause for them to change their methods. They have passed the experimental stage. Thousands of years have gone to the making of the commonest of ordinary bird-nest that we see. It has taken all that time for each species of bird gradually to master the secret of building.

The bird's nest, in its highest form, is the most perfect cradle ever made, so naturally we think of it being, as a rule, soft and downy, warm and snug. Of course, it is not so always. The birds which frequent the seashore and the rivers content themselves, very often, with a rough hollow, either in the ground or in a cleft of the rocks, or upon a ledge of some dizzy cliff. Birds of prey, too, are often rough and ready in their methods. The eagle's nest is a clumsy structure of sticks.

The heron likes to have her nest high and dry in some lofty tree-top,

and lines it with roots and twigs and soft grass. Not many years ago a nest was blown down from a heronry in Nottinghamshire, in England, and an observer, on picking it up, was startled to find that it was made up almost entirely of wire, such as is used by some reaping machines to bind sheaves. The finder of the nest got a telescope, and carefully examined the other nests in the heronry, and found that others had been built in the same way from materials which the birds had gathered.

HOW THE BIRDS HIDE THEMSELVES

The coot or mud hen makes her home among the reeds by the water side. So cleverly does this bird build her nest with reeds like those which surround it, and withered leaves, that it is possible to pass it by many times without finding it.

The moor hen, a European bird which is closely related to the coot, has been known to build a nest of much the same kind as the herons in Nottinghamshire. Usually, however, they build, as our coots do, with sedge, reeds and dead leaves, and make the nest a masterpiece of safety. The nest is placed by the side of a river, stream, or lake, among reeds, in the roots of a tree overhanging the water, or even among the branches of the tree which stretch out low across the water.

The writer of this story sat one day in a boat and saw a nesting moor-hen hide by deliberately sinking herself in the water, so that only the red bony plate of her forehead was visible, looking like a tiny crimson leaf floating on the stream, only six feet from the boat. We rowed away gently, pretending not to have seen through her marvelously clever deception.

TWO BIRDS THAT WENT TO A WEDDING

We all know and love the goldfinch, but not all of us know that he often delays his wedding until the thistles have ripened. The nest of the goldfinch is a beautiful little cup made of the softest grass and finest moss, and the thistle down provides for its fairy silken lining.

The nest of the chaffinch, a European relative of the goldfinch, is built of mosses and pieces of wool, lined with horsehair and feathers. But one pair of chaffinches went to a wedding, after the other guests had gone home, and gathering up the

confetti, built that, piece by piece, into their own little dwelling. Still more curious was the fancy of a pair of spotted flycatchers, which had used a great quantity of wax matches, bound together with pieces of silk and cotton. They had not scorned to pick up a couple of cigarette-ends, and work these into the sides of the nest. The presence of so many old matches in the composition of the nest suggests that the birds must have deliberately sought them out after the first find.

All these birds show a spirit of progress. They prove that when, from choice or need, fresh material, unlike any ever used by their species before, has to be considered, they can build with the new stuff as well as with the natural products with which, during age upon age, their ancestors have been accustomed to work.

INSIDE A BLACKBIRD'S NEST

The English blackbirds build in our garden bushes and trees, in ivy, and in hedges, nests which are so common that the excellence of their make escapes notice. The outside of a blackbird's nest, though only made of coarse grass and other rough material, is admirably woven, but the beautifully arched interior of hardened mud, with its lining of fine grass, is really a splendid piece of work. It seems quite tiny when we look inside, but in it from four to six gaping, gawky youngsters live and grow into their first suit of feathers. The old lady who lived in a shoe could never have had a blackbird for schoolmistress, or she would not have found her children too many for the shoe in which she grumbly lived. The thrush, which floods the air with such wonderful melody morning and evening, and whenever a welcome shower comes to refresh the earth, is another skilful builder which turns clay into a nest-interior as sound as the inside of a cocoanut-shell.

We all have our favorite birds, but there are half a dozen which most of us would agree to place at the head of our list. For many of us the cardinal bird and the nightingale would surely come first. There is such majesty in the melody of this bird that somehow we cannot but regard the nightingale as royal in all that affects it. It ought to live in a sort of bird's palace, we fancy. But fact and fancy do not here agree. The cardinal



A COOT GOING TO ITS NEST ALONG A PATH IT HAS MADE IN THE WATER

bird lines its nest with soft grass, but it is built of twigs and grape vine bark, mixed with leaves and coarse grass. Our great men and women are not always born in the mansions of the wealthy, and therefore we need not be disappointed that our finest singer is somewhat humbly cradled.

The mocking-bird that floods the air with music all day, and sometimes far into the night, is as much a favorite in parts of our own country as the nightingale is in Europe. It chooses bushes and low trees for its dwelling place, and builds a stout nest of bark and roots and stalks of grass, with a soft lining of feathers and hair.

We all agree, again, as



A REED WARBLER'S NEST

to the charm of the skylark; its inspiring song, heard high in the heavens over our heads, and its blameless life, make it a universal favorite. But here, too, we have a surprise in regard to the nest. This high-soaring bird seeks the lowest level for the cradle of its little ones, making a nest of grass on the ground, with only a tuft of turf or a clod of earth for protection.

The favorite in the British Isles is the robin, with his friendliness for man, his brilliant eyes, his handsome breast, and, above all, that sweet trilling song of his which cheers and gladdens us when most other birds are moping. He stays around the dwellings of man all the year—a lov-



A GREAT CRESTED GREBE ON ITS NEST, BUILT ON THE WATER

WONDERFUL HOMES OF THE WEAVER BIRDS



A weaver-bird's nest.



Villages of sociable weavers.



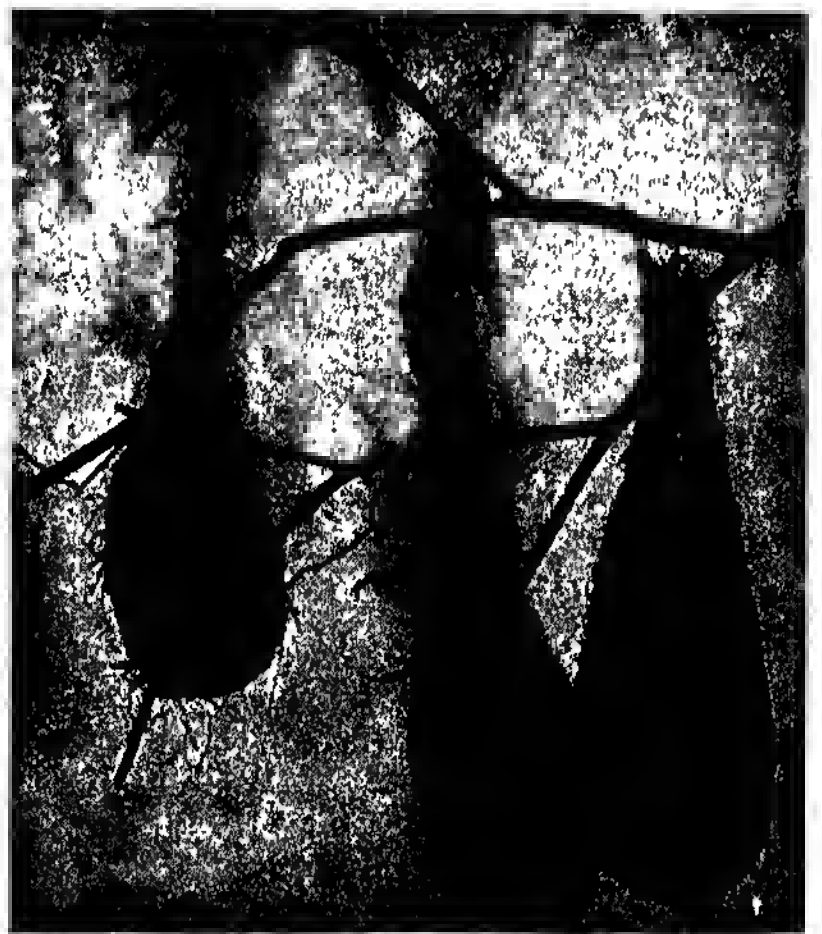
Home of the bower-bird.



A great colony of weaver-birds' nests hanging over a river in East Africa.



A nest at the end of a leaf.



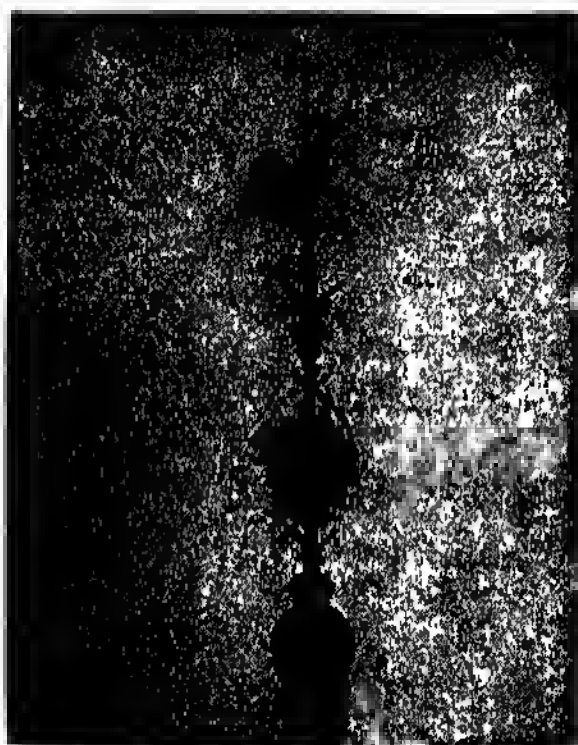
Weavers' nests hanging from a branch.

THE BIRD CARPENTERS AND THEIR HOMES



A woodpecker's home in an old bridge.

Photo on left by Cherry Kearton, others in these pages by Oxley Graham, C. G. Lane, W. Bickerton and Charles Reid.



Rook's nest on a weathercock



Magpie's nest on a chimney-stack



Stork's nest on a chimney

able little fellow, the greatest admirer that man has. He is the only bird that will fly out of a tree or hedge to come and meet us. Pretend to do a little work on the lawn or in the borders, and down comes Master Redbreast, to learn what you are doing, and, more likely, to see if your labors are bringing to light food for himself. His nest is neat, trim and round. It is built of leaves, dry grass and mosses cleverly woven together.

WHERE THE ENGLISH ROBINS BUILD THEIR HOMES

It would puzzle us to say where the robin redbreast will not build. A little girl placed in a greenhouse a cage which had once housed a dormouse, and in the tiniest part of the cage a pair of robins built a magnificent nest, and reared five children. The little girl visited the robins every day throughout the sitting period, and the baby robins daily, until they were old enough to fly away into the garden.

We often read of the nesting-places of robins, and here are a few: A jam-pot in a shed of a kitchen garden; the kitchen mantelpiece of a house; a pipe in the organ of a church; behind the clock in a public library; near the furnace of a blacksmith's forge; in the basket carried on a bicycle; in the collar of a coat hanging in a shed.

Luckiest of all was a gentleman, who had a family of robins in his drawing-room. In the centre of the room was a palm in a tub, draped with muslin. The two birds flew through the open window, took up their quarters in the tub, helped themselves to moss from other pots of plants in the room, and made their nest, not in the least afraid of the people constantly in and out of the room.

JENNY WREN'S WONDERFUL HOUSE

Next to the robin, little Jenny Wren is perhaps our most trustful friend among the birds. It loves to build near us, though it is not so boldly friendly as the robin. The wren that we know best is the house wren, which builds its feather-lined nest anywhere about the house. There are many different families of wrens in this country, however. Some of them live in marshes where they build globe-shaped nests, with an entrance at the side. These beautiful little nests are lined with soft satin-like down stolen from the marsh plants, and for safety are fastened to the reeds among which they are built.

The European wren makes a wonderful nest, roofed in with a fine dome, and having the entrance at the side. The shape of the nest makes it the more curious that the wren should choose some of the places in which we find it at home. Wrens have been known to build in potting-sheds over the heads of gardeners hard at work, in the sleeve of a coat left for a day in an out-house, and beneath the covering of a scarecrow set up to frighten off birds less friendly to man's interests.

THE UNTIDY HOME OF THE ENGLISH SPARROW

We all know the rough, untidy looking nest of the English sparrow, now so common in America. We find

them everywhere; on the top of an electric light pole, in a corner of the veranda, in the doorway of a New York apartment house. This busy, impertinent, quarrelsome little bird is afraid of nothing, and loves to build near the habitation of man. We do not love him, but we do love the field sparrow and the song sparrow. These birds sing a sweet song, and the song sparrow especially has a beautiful note. These birds make their nests on the ground, among the tall coarse grasses, to which the song sparrow fastens hers securely. The chipping sparrow, however, builds a beautiful, hair-lined nest in the shrubbery, in which to lay its spotted eggs.

The starling has, like the sparrow, been introduced in this country. It is not a friendly bird, like some of the others. It takes up its quarters in English chimneys, beneath potting-sheds, anywhere, in fact, where it can creep or dive into a nest hidden from observation. It is an untidy nest at best that it makes, so it is best hidden. An equally close friend is the barn swallow or house martin, which makes a home as clever as a bee's, of mud and straw, a saucer-shaped structure properly ventilated yet so fashioned that neither wind nor rain can enter.

THE FRIENDLY BIRDS FOR WHOM WE PROVIDE HOUSES

The friendly little chickadee or titmouse makes her nest in the trunk of an old tree. Her nest must be soft and warm, and to make it she gathers up feathers dropped by other birds, scraps of wool, bits of fur, or soft moss. If we prepare a box for her she will gladly take possession of it, and build right under our windows.

So will the bluebird, which comes with its early song to tell us that winter has gone. This bird as a rule builds a grassy nest in the decayed branch of a tree; but we do not tolerate decayed trees in our gardens or orchards, and so if we want the bluebird near us, we must provide it with a house.

These birds are examples of the intimate relations between man and his feathered friends. They came here before man; they have seen their old haunts gradually given over to houses and gardens. But they have adapted themselves to circumstances, and are prospering by taking advantage of the shelter which man's home provides for them.

But much more wonderful than the nests we have been describing are the hanging nests of the orioles and vireos. The Baltimore oriole weaves a hanging basket from the end of the branch in a high apple tree in the orchard, or perhaps an elm tree by the roadside. The vireos build their nests in the crotch between the forks of a small branch and there they hang, like a basket from a tripod.

THE SWINGING CRADLE OF THE TAILOR-BIRD

But even these nests become ordinary when contrasted with the swinging cradle made by the tailor-bird. This bird, with only its beak for needle, sews two or three leaves together in the form of a cup, and in this places its nest of wool, hair, and fine grass. It



Redstart's nest in a heap of bricks



Flycatcher's nest in a gatepost



Great tit's home in a nesting-box

uses thread, which may be either silk, snatched from some caterpillar's cocoons, or pieces of wool or strong vegetable fibres.

The birds of Europe and North America which tunnel and build houses—the swallows and martins—are wonderful, but there is a more famous mason than these—the oven-bird of South America. This bird collects horsehair and fibre, and with these binds together the walls of the mud house which it builds. This mud house is wonderfully designed. It is built on a firm foundation of hardened mud; it has stout walls, and is covered in with a dome—a most difficult piece of work for a bird working with soft mud without scaffolding. Inside, the home is divided by a stout wall into two compartments, one of which is the nursery, and the other the living room.

THE HUSBAND WHO LOCKS UP HIS WIFE

Our carpenter-mason birds would probably own the hornbills as the head of their profession. A pair of these birds make their nest in the trunk of a tree, and the female, when about to lay her eggs, enters the hole and does not come away until the eggs are hatched. There is no way out, for her lord calmly fastens her in by plastering up the hole through which she has entered, leaving only a narrow slit through which she can thrust out her beak to be fed by him. The male has a hard time in feeding her and the whole family which is presently hatched.

Birds build pretty well everywhere, with all manner of material. The kingfisher is content to have evil-smelling fish-bones in the hole in the bank in which it lays its eggs; the hoopoe has a nest which smells vilely, apparently as a means of protection. A bare ledge of rock for a sea-bird, a hole in the sand for the ostrich, a mound of decaying vegetation which acts as a natural incubator for the eggs of the brush-turkey; nests of leaves, nests of spiders' webs, nests of dainty lichens; nests shaped like cups, like bottles, like hammocks, like sugar-loaves; nests made from a sort of glue from the birds' mouths—there is no end to the variety of nest-making, from the simplest to the most complex.

The kingbird or bee-killer weaves a beautiful nest of weeds and stalks and fibrous rootlets, and lines it with soft moss and silky down from plants.

The smaller the bird, the more brilliant its workmanship, as a builder. Some of the humming-birds have homes which would charm an artist—nests of silk stolen from webs, and blended with daintily tinted mosses. One bird, the baya of India, actually uses glow-worms to adorn its home. The nest is shaped like one of those wicker-covered bottles in which salad oil is sold, and hangs from a branch of a tree.

THE LOVELY HOME OF THE BOWER-BIRD

We do not know whether it is a love of beauty which makes the baya thus decorate its home, but we have no doubt about the love of attractive surroundings shown by the bower-bird of Australasia. This bird makes a nest, but, in addition, builds a hall of beauty, consisting of tall grasses, whose heads meet overhead to form an archway. The hall is decorated with bright shells, and any other decorative article that the bird can carry off.

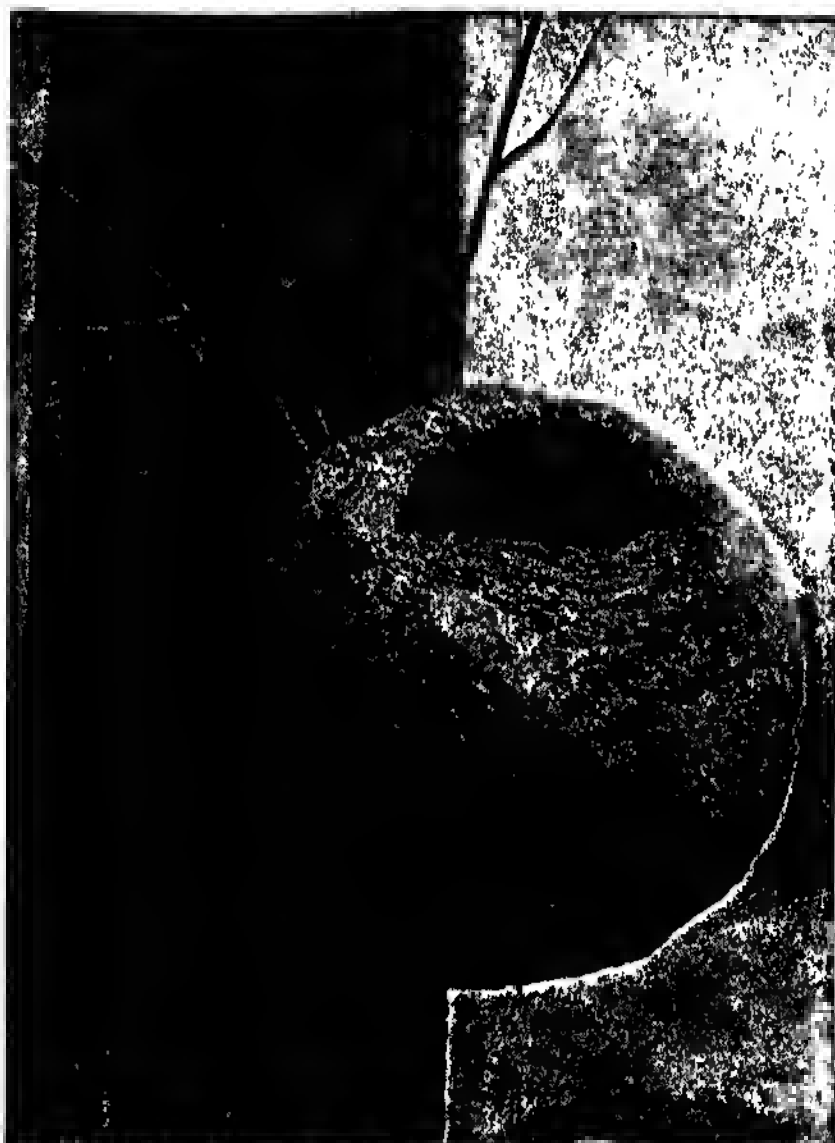
It is the smaller birds, whose tiny nestlings require great warmth until they gain strength and feathers, that make the most charming nests. Larger birds take less care in building. The eagle makes a rough nest of sticks, generally on a ledge of rock or in a tall tree on some rocky place from which she can survey the country with far-seeing eyes.

Ducks make their nests on the ground, of grass and leaves, lined with feathers. The eider duck, which lives in the cold regions of the north, in Iceland, Norway, Greenland, and Newfoundland, builds her nest on a rock ledge, and not only lines it with down which she has plucked from her own breast, but makes a blanket of the down to keep the eggs or the young birds warm when she is absent from the nest. This down is much used to line warm garments and bed coverings, and as the hunters have found that if the down is taken, the mother bird will line it again, the nest is robbed again and again until the poor bird presents a sad appearance and can spare no more. When that time comes, she is allowed to hatch her eggs in peace.

It would require a very big book to contain the whole story of birds' nests, but we have already seen enough to realize how clever bird builders are: to them the beak is saw, pickaxe, needle, trowel, and, above all, hands.

THE NEXT NATURE STORY IS ON PAGE 5801.

FOUR SPLENDID PLACES TO LIVE IN



BRAZILIAN BIRD'S NEST FIXED TO TREE



REED-SPARROW'S NEST BUILT ON REEDS



OSPREY'S NEST WITH OTHERS BELOW



ALBATROSS AT HOME ON THE SEASHORE

WHEN HELL GATE WAS BLOWN AWAY



Long Island Sound and New York Bay are connected by the East River, which is not a river at all, but an arm of the sea. Around Ward's Island the channel for ships was so dangerous, on account of the rocks, that the boatmen called it Hell Gate, and the United States Government determined to remove the rocks. Work was begun in 1851 and is not yet entirely completed. Our picture represents the explosion, October 10, 1885, when 283,000 pounds of powerful explosives were set off to destroy Flood Rock. This is the largest blast ever fired. The whole rock was honeycombed with chambers for the explosion.

The Book of FAMILIAR THINGS

WHAT THIS STORY TELLS US

WHO has not, at some time or other, felt a thrill of dread upon hearing the clanging of a fire alarm? At any rate there are few to whom it does not bring a quickening of the pulse. The fear of fire is an old one, so deep rooted in the past that small children feel it by instinct, even though they may never have seen a house ablaze. All animals, except those which have associated with man for a long time, seem to have this fear also. You have read of hunters keeping wild beasts away from them by building a fire, or even making a circle of fire around them. Yet fire seems to have a fascination for some small creatures, and they sometimes run or fly into it.

WHEN THE FIRE ALARM RINGS

FIRE cooks our food, keeps us warm in winter and it makes the steam which turns the wheels of our great industries. Nature has offered us no more useful servant than this fiery child of hers. But let the master only turn his back one moment and the slave leaps up in rebellion, hungry to devour and to destroy. Who has not felt a thrill of dread at the sound of the alarm?

While man lived in caves or tents the danger was not so great. It was when he began to live in wooden houses and began grouping them together in towns and cities that the enemy began to be more dangerous to his possessions. All through history we find accounts of conflagrations that wiped out great cities. For when once the enemy had gained a foothold the people were helpless; all they could do was to gather together as much of their valuables as they could carry and flee to the open country for safety, resigning everything else to destruction.

THE ROMANS ORGANIZE A FIRE DEPARTMENT

It was the Romans who first attempted to offer resistance to these terrible raids. Possibly their experience in fighting their many human enemies suggested it to them; they were the masters, in their time, of the science of military warfare. Probably

CONTINUED FROM 5706

it occurred to them that the same methods could be employed successfully against the two kinds of enemies. At any rate Rome was the first city to organize a regular fire department, a standing army of fire fighters, which at one time numbered seven thousand.

Could we have a moving picture of a great fire in Rome, two thousand years ago, it would probably present to us a scene not very different from those we sometimes witness to-day in our own modern cities. The houses in the poorer and more populous quarters of Rome were usually built entirely of wood. Each family kept a fire burning on an open altar, in honor of the domestic gods, and so it was no wonder that fires frequently broke out.

The householder would rush out into the street, shouting. But there would be no alarm boxes to which he could turn. Instead there were men stationed along the streets, at short distances apart, known as "nocturnes." From one nocturne to another the alarm would be shouted along the line until it reached the nearest "castra," or fire house, where the fire companies covering that district would be quartered. Then all the human alarm boxes within hearing would rush to the scene of the fire and become

policemen. Just as the police do at our fires, they would drive back the gathering crowds and establish strict fire lines.

Not many minutes would pass; then, above the excited murmuring of the crowds would rise the distant sounds of shouts and the quick tramp of many feet.

The nocturnes would rapidly clear an opening through the crowds and through the passage would charge a centurion, heading a company of firemen in metal helmets and leather jackets and trousers. Some would be bearing "siphones," wooden hand-pumps that worked like syringes; others would be armed with axes, hammers, saws and iron bars, while still other groups bore short ladders, so made that their ends fitted and could be clamped together, forming a means of ascent to the tops of the highest buildings.

After these foremost squads would follow the main mass of the firemen, the "aquarii," numbering hundreds, each carrying a light earthenware vase. The aquarii would immediately form into chains to the nearest cistern, supplied from the great aqueducts leading into the city, and presently the jars would begin emptying a continuous stream of water in the hand-pumps.

THE FIRE CHIEF FINALLY ARRIVES

Suddenly a chariot would dash through the passageway, bearing the "prefectus vigilum," the fire chief, who would assume command. Surgeons, too, would be in attendance, to care for those who might be injured or overcome by the smoke. There were three attached to each fire house. The pillow bearers, each four carrying among them a huge, leather pillow, each pillow at least four feet square and stuffed with feathers, were on hand. Should anybody appear in the upper windows of the burning building, the pillow bearers would immediately drop their pillows below the windows, upon which the imprisoned inmates of the building might leap. There are expert fire fighters to-day, who say that nothing has ever been invented that serves its purpose better than the life-saving pillow of the old Roman fire department.

Last to arrive would be the "questionarius," the most feared and respected of all the Roman fire officials. As his title might indicate, even to those who do not know Latin, his business was to ask

questions, but to many his questions were anything but comfortable. How did the fire start? Was it accident? For the Roman laws demanded that responsibility must be fixed for every fire. It was the business of the questionarius to fix the responsibility. He established a court of inquiry, even before the flames had been subdued. He could compel testimony from everybody. It is only recently that modern cities in this country have taken example of old Rome and appointed officials whose duties correspond to those of the questionarius; he is known as the fire marshal.

SOME GREAT FIRES OF WHICH WE KNOW

When the Northern barbarians destroyed Rome a great many of her institutions were lost to the world. During all the dark Middle Ages men thought more of war and destruction than of saving lives and property from the flames. Great fires were thought to show that God was angry. Berlin was destroyed in 1405; Moscow, Lisbon, Venice, Vienna and Copenhagen suffered enormous and disastrous fires. Constantinople was entirely or partly wiped out a dozen times. London was again and again laid waste, notably in the years 798, 1087, 1132, 1212 and in 1666, the last being the "Great Fire," which burned for four days and destroyed 13,000 houses and public buildings covering 436 acres. Samuel Pepys in his famous Diary shows how helpless the people were. In the hope of checking the onward sweep of the flames houses were blown down with gunpowder across those sections toward which the wind was blowing the flames, that they might have nothing to feed upon.

The great fire of London seems to have waked the people to the need of something at least approaching a fire department. Immediately afterward officials were appointed who must make it their business to devise some means to check future fires. The hand-pump was brought into use again. Volunteer fire companies, too, were organized, just as they are to-day in our villages and small towns.

FIRES HAVE ALWAYS BEEN DESTRUCTIVE IN AMERICA

In the American colonies the problem of checking fires was even more serious than in the mother country, for here, because of the vast forests so close at hand,

the houses were built almost entirely of wood. One of the first fire companies to be organized in this country was founded in Philadelphia, in 1736. Benjamin Franklin was one of the four chiefs. Each member was expected to furnish, at his own expense, six leather buckets and two stout linen bags. The buckets, of course, were intended for throwing water on the flames; the bags were used as receptacles for whatever valuables might be saved from the burning buildings. In New York similar fire brigades were organized and it became quite the fashion for the young men of the city to join them.

EARLY FIRE FIGHTERS IN NEW YORK

The apparatus of these early fire brigades was so simple that it seems a wonder to us now that they could accomplish anything at all against even a single house afire. Everybody has seen the old prints depicting fire scenes of that period; the eight or ten men working the old hand-pump; one or two men squirting a stream of water on the flames from a hose not much thicker than that used in a garden; and the two chains of firemen formed between the pump and the nearest source of water supply, passing the buckets to and fro.

The invention of the steam engine brought about a big change. With steam-driven machinery big pumps could be employed, capable of throwing powerful streams of water against burning buildings. The first steam fire pump was used in England in 1829. Its first appearance was ridiculed and the name "steam squirt" was applied to it. Even so was the first steamship laughed at. Yet the "steam squirt" was the first of the modern apparatus used to-day by our fire companies, so complicated that whole books are written on how to work them.

STEAM ALSO INCREASES THE DANGER FROM FIRES

Steam has also increased the danger from fires. It has brought railway locomotives, showering sparks on shingled roofs, factories and warehouses, and cheap lumber, which encouraged more than ever the building of wooden houses. The invention of matches, one of the most common origins of fire, soon followed, and also the use of petroleum for lighting. Meanwhile, smoking was becoming more common.

In Europe these changes did not increase the danger to the same extent as in this country, for there the houses were largely built of stone and brick, because of the scarcity of timber. In this country the risks multiplied tenfold. The white and yellow pine, which was the principal material used in the building of American houses, was especially quick to burn. We had no laws about building.

Men said that the city had no right to tell a free-born citizen how he should build his home. And if John Smith & Co. chose to erect a wooden warehouse in which to store cotton or cases of petroleum, whose business was it but their own? If they were willing, for the sake of saving extra expense, to run the risk of fire, from which they would suffer most, who had the right to interfere? It is only of late years that we are beginning to realize, as they did long ago in Europe, that our personal liberties must not endanger the welfare of our neighbors.

GREAT FIRES WHICH HAVE OCCURRED IN THE UNITED STATES

From the earliest days this has been the country of big fires. New York suffered heavily in 1835 and again in 1856; Pittsburgh was destroyed in 1845; Chicago was almost completely wiped out in 1871 and Boston suffered heavily in 1872. Charleston, Philadelphia, Savannah, Portland and San Francisco, each has a terrible fire history of its own. Where a European city suffered disaster once or twice a century, American cities suffered three or four times in the same period.

With the same energy that they had employed in building up this wonderful country, the Americans set about organizing means of protecting their possessions against this terrible and growing danger. The result was that our fire departments have been, from the very first, the best and the most efficient in the world. Need calls forth invention. It was our pressing need of fire-fighting apparatus that caused us to improve on European inventions and to invent machines of our own. Another fire danger peculiar to this country was the tall buildings that were being erected in the cities. This called forth the invention of the water tower, which would be almost unnecessary in most European cities, where houses are seldom more than three stories high.

THE BEST FIRE DEPARTMENT IN THE WORLD

No wonder, then, that New York, with its skyscrapers, should have the biggest and best fire department in America. While buildings were limited to three or four, or even five, stories, it was comparatively easy to deal with fire. When they began shooting fifteen, twenty and even forty stories into the air, it was another question. At first there was some talk of passing laws against the erection of such high buildings, but finally the engineers found a solution.

They got the idea of building pump houses in which could be installed gigantic steam pumps, so powerful that they could throw streams of water from the nozzles of hoses with almost the same force that a shell is fired from the mouth of a cannon. These pumps would be connected with the entire water piping system throughout the section of the city in which the skyscrapers were situated.

THE HIGH PRESSURE SYSTEM A SUCCESS

When the first test of the high pressure system was made, each pump station, five in number, made a delivery of 18,000 gallons of water a minute. Some of the individual pumps discharged as much as 3,800 gallons a minute. So powerful is a stream of water from a high pressure hose that it can make a brick wall crumble as though struck by an explosive shell. By raising the stream at an angle of eighty degrees it could easily reach the top of the highest apartment house in the city, or it could wash the dome of St. Paul's Cathedral in London.

HOW FIREMEN ARE CHOSEN FOR A GREAT DEPARTMENT

Firemen are chosen very carefully. First, the applicant for the position of common fireman must pass a very strict physical examination. His body must be strong and as nearly perfect as possible. After he has been passed by the doctor he must undergo the test for muscular strength. The candidate must hang suspended from the rung of a horizontal ladder by his hands, then pull himself up till his chin is above the rung; he must perform this feat fourteen times. Next a dynamometer is used to test the strength of the leg and back muscles and the joints of the knees. Finally there are various jumping feats to perform. Then he may be put on probation.

HOW FIREMEN ARE TRAINED IN A FIRE COLLEGE

If he is appointed he must first attend the college training school for probationers; like the soldier he must undergo a period of drill before he is sent out on the firing line. Here he is trained in the use of scaling ladders on a building a hundred feet high.

At the school the recruit is assigned to one of the drill squads and gradually broken in. He is taught to handle, raise and balance the ladders before he is allowed to use them. As the ladders weigh from twenty to sixty-five pounds, and range from fourteen to twenty feet in length, it can be seen that it takes experience to handle them. After the novice has mastered this he is made to climb to the first window, then to the second and, as his nervousness gradually leaves him, he mounts to the top.

Next the young fireman is taught how to build a "chain" of ladders hanging from the windows, up to the top. A man is stationed at each window. In this drill when the first man reaches the first window he fastens himself to his ladder by means of a large steel snap, attached to a strong canvas belt about his waist. Then he reaches down and pulls up another ladder, passed to him by the man below. At the top of each ladder is a long hook which just fits over the sill of a window. The first man raises the second ladder, and hooks it into the window above him, after which he climbs it, swinging like a monkey on the bough of a tree. And so the chain is built, each man coming up from below carrying one ladder for the chain. This exercise tests the nerves of the recruits, for they must undergo more serious dangers than this in discharge of their duties.

There is, indeed, need for iron nerve, for it is no human enemy that this fire army of New York must fight. The dangers to which firemen are exposed may not seem so picturesque as those which soldiers must undergo on the firing line, but, considering the smaller numbers engaged, the killed and wounded are quite as many. Only too often does a company return to the fire-house after a fire with one or more of its members missing. If the missing have not been carried to the hospital, they are dead, for the battle has been with an enemy that never takes prisoners.

WHAT FIRES ARE THE MOST DANGEROUS?

It is not always the fire that goes roaring through the roof of a building, lighting up the streets for a mile around, that presents the most danger. It is in the dull, smoky cellar fires that the fireman is most often overcome by smoke or gas. Then there is the awful "back draft," which every fireman soon learns to dread. Dashing up the stairway of a burning building, dragging the hose after them, the men come to a closed doorway. With axes they smash in the door. The smoldering fire within is exposed to view—and to the inrush of fresh air. For a moment there is an awful pause; then, as the oxygen strikes the fire the whole room explodes into a roaring flame. Out through the open doorway leap the fiery tongues, as though flashed from the mouth of a cannon. The experienced fireman instinctively falls flat, his face in his hands, ducking the blow. But many a man has been killed or horribly burned by back draft. At one fire, in New York City, some years ago, this kind of an explosion blew out the whole front of a building and severely injured the greater part of a whole fire company.

The falling wall is another common danger. Sometimes a brick wall will buckle in the middle and crumple, dropping like a curtain. The tumbling bricks are then easily dodged. But quite often the whole wall will fall straight out, reaching across the street and remain almost solid until it strikes the ground. This is the kind that kills or cripples whole companies.

Broken glass and molten lead are other perils met with at almost every fire. All through the department are found men bearing scars from wounds inflicted by glass splinters. And again they will enter large buildings not yet in full flame, encounter thick smoke and lose the way out. In such a case the experienced fireman immediately drops down beside his hose and, by following it, reaches the entrance.

THE NAVAL FIRE FIGHTERS

We have likened the five thousand men of the New York Fire Department to an army, but there is a section of it which should rather be compared to the navy. In New York, as in all cities on the water, there are certain sections which cannot be easily protected by the fire fighters on

land, or at least, they can only attack fires there from one side. That is the shipping district. Docks reach out a fifth of a mile into the river or the bay, and on some of them are big warehouses filled with goods. Great ships lie beside them. On catching fire a ship may have its mooring lines burned through and then drift out of the reach of the streams from the fire hose. What adds to the danger of water-front fires is the fact that a fresh breeze is often blowing in from the water, ready to fan the flames inward. And a fire can be fought most effectively from the windward side.

To protect its long line of shipping, New York maintains a fleet of fire boats, really floating fire engines. At first glance one of these fire boats might well be taken for a torpedo boat, for the rows of brass-headed hose connections along the side of the deckhouse and the formidable-looking stand-pipes, or "monitor nozzles," as they are called, mounted fore and aft, give the appearance of naval armament.

THE POWERFUL FIRE BOATS OF NEW YORK

Each of these marine fire fighters is moored at a dock, beside a house erected by the Fire Department especially for her crew. This building is fitted up very much like any fire-house; sleeping quarters upstairs, sliding-poles by which the men can descend quickly to the ground floor, and a full set of telegraphic instruments by which the company may be informed of all the alarms that are sounded throughout the city. The boat itself lies with steam up at all times, ready to speed away on business, whether it be to a burning ship or lighter in mid-stream or to a burning coal bunker or dock at the other end of the city.

These boats are built of steel throughout and the deckhouse and wheel-house is made of cement; there must be no woodwork about them that could ignite, for sometimes they are obliged to approach very close to a fire and deliver their streams at close quarters.

One of these fire boats, the New Yorker, can throw 12,000 gallons of water a minute at a blazing dock. The water, of course, is pumped up from over the side, up into an air chamber, which equalizes the pressure, then into a twelve-inch pipe which runs all around the boat, just below the deck, from which there are

forty-two outlets for hose connections, the biggest being six inches in diameter. Some of these lead to mounted nozzles, resembling machine guns, two of which are on top of the wheelhouse. From one of the latter a stream of water can be thrown over three hundred feet.

With all her power going the New Yorker can bombard a burning ship or warehouse with a veritable cascade, which only the biggest blazes can withstand for long. One blow from her monitor nozzle stream can make a hole in a brick wall.

Almost laughable is the fact that each of these boats, in spite of its being built especially for going into the very midst of the flames, must carry a row of fire buckets in its wheelhouse. Such is the regulation applying to all boats plying New York Harbor. Since laws must be applied to all alike, no exception can be made in favor of the fire boats.

A TERRIBLE WATER-FRONT FIRE WHICH ONCE RAGED

Many have been the terrible sea battles with fire through which the New York fire fleet has rendered splendid service. Perhaps the most brilliant service it has rendered was its battle with the flames during the disaster that occurred in 1900. A fire started on one of the piers on the New Jersey side of the river, alongside of which the German passenger ship Saale was moored. In less than fifteen minutes the flames, fed by stores of cotton, turpentine and oil, swept from pier to pier. A strong breeze was blowing at the time. Before anybody could realize the danger, a quarter of a mile of docks and ships were ablaze.

The Saale and four other big German passenger ships were crowded with visitors. Before the crowds aboard could realize what was happening they were in the midst of roaring flames, which swept over them.

Whether they were cast loose by their crews or whether their mooring lines were burned through, the four big steamers, each blazing like a torch, drifted out into the river, crowded with people. Hundreds jumped into the water and of them some were rescued by tugboats and other craft, but most of them were forced down below into the holds. The portholes were too small to permit of their escape, and most of them perished. Altogether over four hundred people, mostly women and children, were burned to death.

HOW THE FIRE BOATS SAVED THE CITY OF NEW YORK

But it was the fire fleet which saved these drifting conflagrations from setting ablaze the whole length of the shipping district on the New York side. One of the burning steamers, the Bremen, drifted across the river and set fire to a wharf, then to a lighter. One after the other the fire boats quenched these blazes. Finally they were able to give their whole attention to the four great steamers blazing in the river, pouring whole broadsides of water into them. Had it not been for their service there can be no doubt that one of the biggest fires in the history of any seaport would have swept the New Jersey and New York shores of the Hudson River.

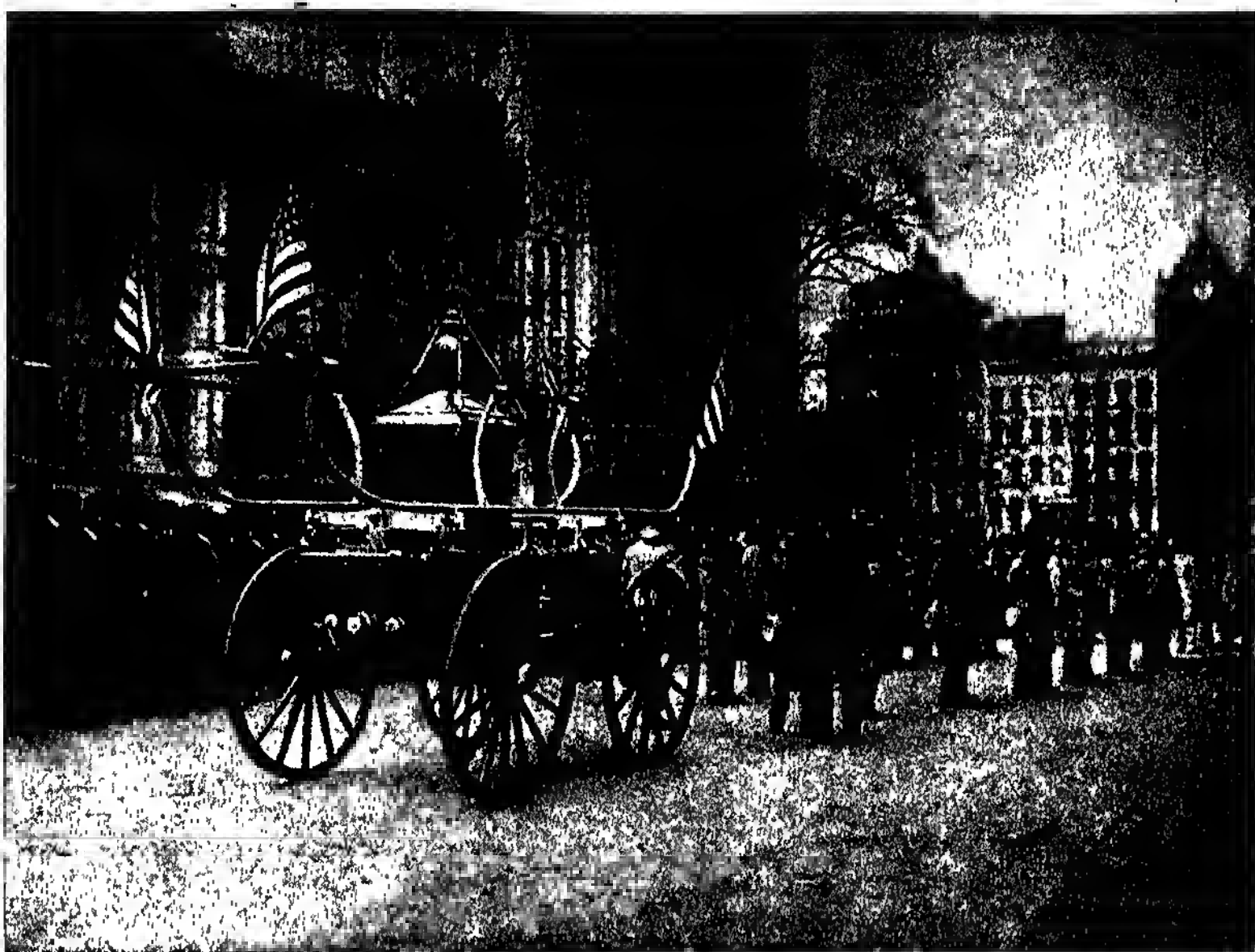
Whole books might be devoted to the exciting encounters of the American fire departments with the enemy. The heroic fight of the firemen with the great fire that followed the earthquake in San Francisco, in 1906, is quite as thrilling as the story of any war. Another stirring event was the great Baltimore fire, in 1904, though fortunately here no lives were lost. On this occasion fire companies from Washington, Philadelphia and New York responded to the call for help and were hurried down on special trains. Here the flames had opposed to them, forces from four big cities as well as smaller help sent from small towns and cities.

WHY SUCH FIRE DEPARTMENTS ARE NECESSARY

It may seem that we have reason to boast of our fire departments, and, indeed, we really have reason to be proud of the brilliant fights that our firemen have made. But if we think a minute we shall see that we have very little to be proud of. Why is it that in this country fire destroys four times as much property as in England? Our yearly loss amounts to about three hundred million dollars; about three dollars for each man, woman and child of the population. The average for European cities is much less than a dollar for each person.

The answer is that in Europe they apply the old proverb that an ounce of prevention is worth a pound of cure. First of all, European cities have passed very strict regulations in the building of their houses, especially in limiting their sizes. There the people recognize the

EARLIER DAYS IN FIRE FIGHTING



Steam fire engines supplanted the old hand engines just as motor engines are supplanting steam. Here is shown one of the old hand engines, which was drawn by the firemen themselves, generally volunteers. The water was pumped by raising and lowering the bars at the side, which we here see lifted out of the way. The men who are holding the rope are the old volunteers, some of whom are now quite old men.



Several years ago, the New York Fire Department showed in a parade the different kinds of fire fighting apparatus which had been used in New York from early times. Here a part of the parade is shown about to start. The signs describe the apparatus and tell when it was used, or else give advice on fire prevention. A modern fire engine can throw more water than a dozen of the earlier engines, and throw it higher.

right of the city to dictate to its citizens of what material they shall build houses or factories. We, too, have begun to learn this lesson.

WHY THEY HAVE FEWER FIRES IN EUROPE

Another reason why the cities of Europe suffer less is because they follow the example of ancient Rome. The office of "questionarius" plays an important part. Probably most of our fires are caused by carelessness. The Europeans will not tolerate this as an excuse. They regard carelessness which endangers the lives and property of the city as a crime and punish it accordingly. One of the fire chiefs of New York gives an illustration in an incident which occurred while he was on a visit to a European city.

A blaze broke out in a small hotel at which he was stopping. The fire department responded to the alarm, put out the blaze, which did little damage, then carefully cleaned up the mess they had made. Next the fire marshal summoned the guest in whose room the fire had occurred. He was able to prove that it had happened through no fault of his. A coal had dropped out from a stove and ignited the floor. Next the landlady was sent for. She stated that she had just bought the house and that the stove stood as it did when she took possession. Then the previous owner was directed to appear before the fire marshal. He admitted that he had neglected to comply with the laws demanding that the floors be protected by metal sheeting. Thereupon he was heavily fined.

We, too, are adopting this method of prevention. Many American cities now have appointed fire marshals, whose business it is to "ask questions." We are indeed learning that prevention, rather than heroic fire-fighting, is the solution of our fire problem. "An ounce of prevention is worth a pound of cure."

HOW FIRES MAY BE PREVENTED

There are many ways by which the loss from fire can be prevented, some of them easy, and some more difficult. One way is to build houses which will not burn so easily. Wood has been scarce for a long time in Europe and most houses there are built of brick or stone. In America wood has been so much cheaper than either of the other materials, that most houses in the country or

in small towns and cities have been built from the product of the forests.

Another reason is the fact that our American towns have grown so rapidly that we have been too impatient to wait for substantial houses to be built. Wooden houses can be built much more quickly than brick or stone buildings. Then, too, a man often builds a wooden building expecting to tear it down when he becomes more prosperous. Now, a wooden building burns quickly and may set the buildings near by on fire also, while a fire in a brick building may be confined to the one house, and the walls may be saved.

Another cause of many fires is bad workmanship. The mason who is building a chimney does not always take the trouble to be sure that the chimney is tight. Then some day when there is a hot fire in the furnace, stove or fireplace, a spark goes through the crack and the house burns. Sometimes men who put in electric wires are careless, and when wires rub together a fire may begin. In some cities all electric wires must be placed in metal tubes.

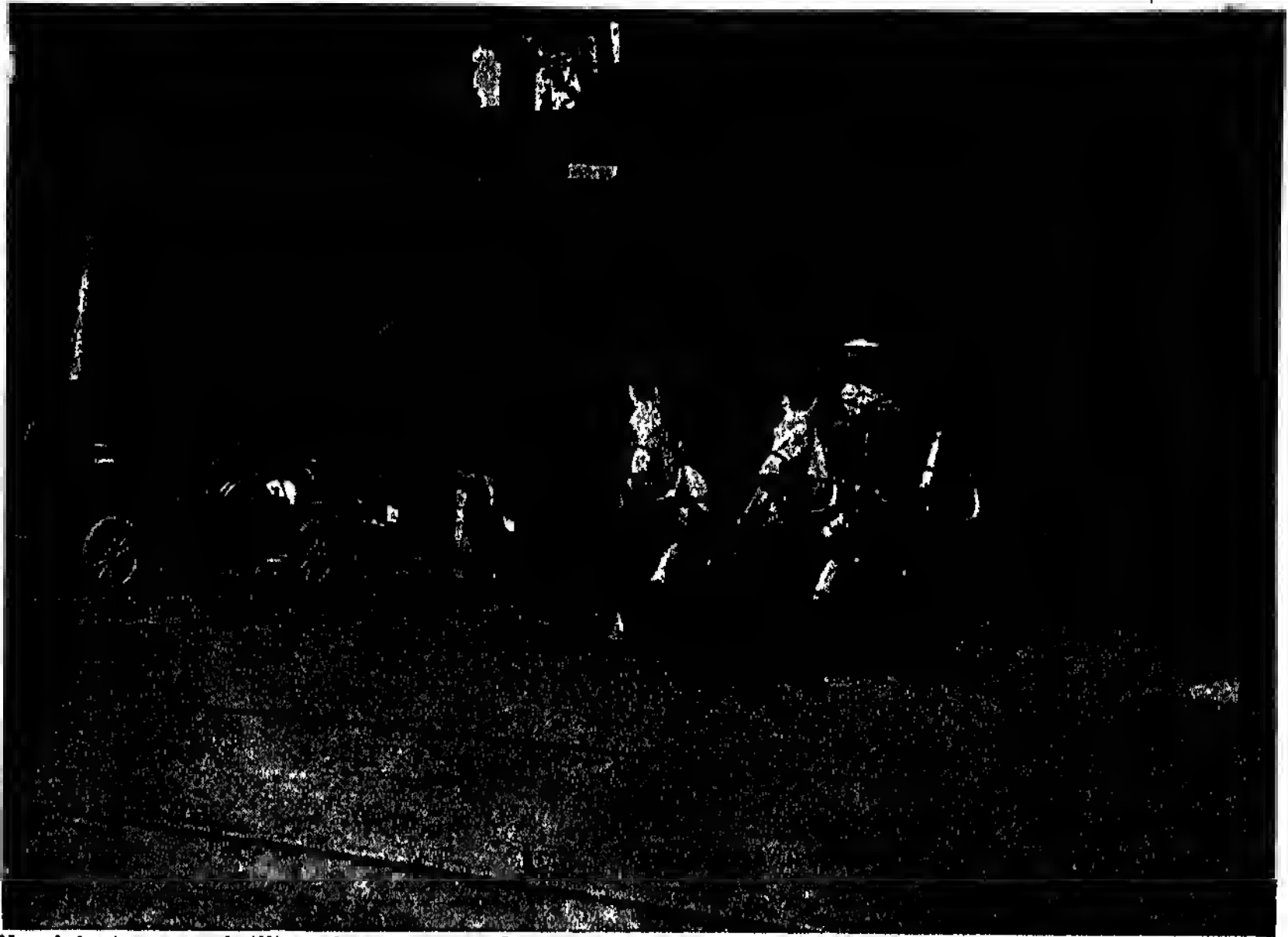
HOW EACH ONE OF US MAY HELP TO PREVENT FIRES

Another reason why we have so many fires is that so many of us are careless. Matches are so cheap that we use more than any other people, and too often we throw one away without being entirely sure that the flame has gone out. Many people are careless enough to throw burnt match sticks into waste baskets. Thousands of fires start in this way. People are often foolish enough to light matches where gasoline or kerosene is stored. The fumes of gasoline may catch fire though the flame is several feet from the liquid. That is the reason why smoking is forbidden in garages. Kerosene does not vaporize so easily.

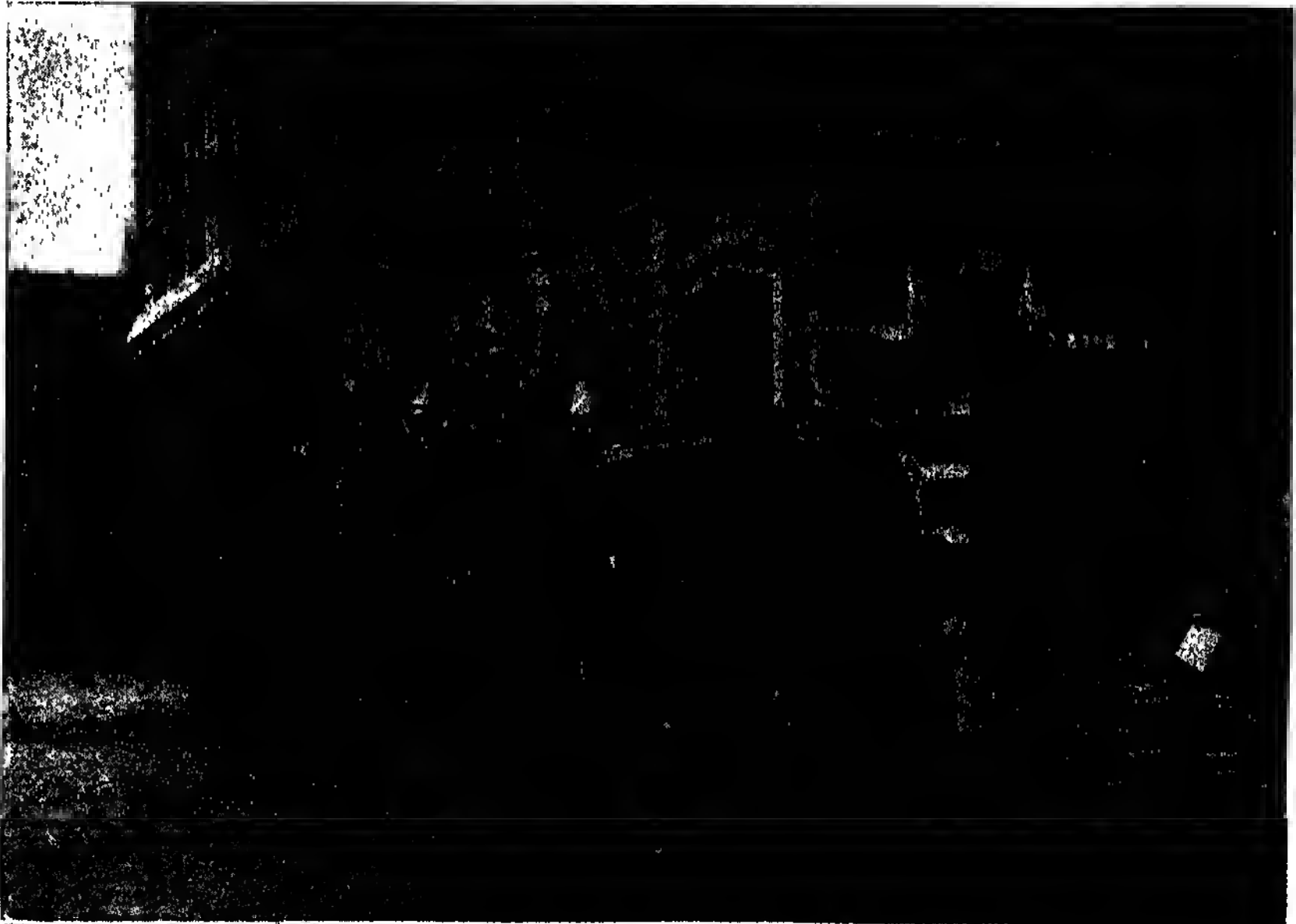
Perhaps we drop one of the old-fashioned kind and some one steps on it; or matches are left where mice or rats can get at them. It is very easy to keep matches in a metal box or in a jar, but very few people take this trouble. If we used only safety matches there would be fewer fires. If we do carry ordinary matches about with us we should always keep them in a metal box, and when we light one be sure that it can do no damage before we throw away the stick.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5793.

PRESENT AND FUTURE IN FIRE ENGINES

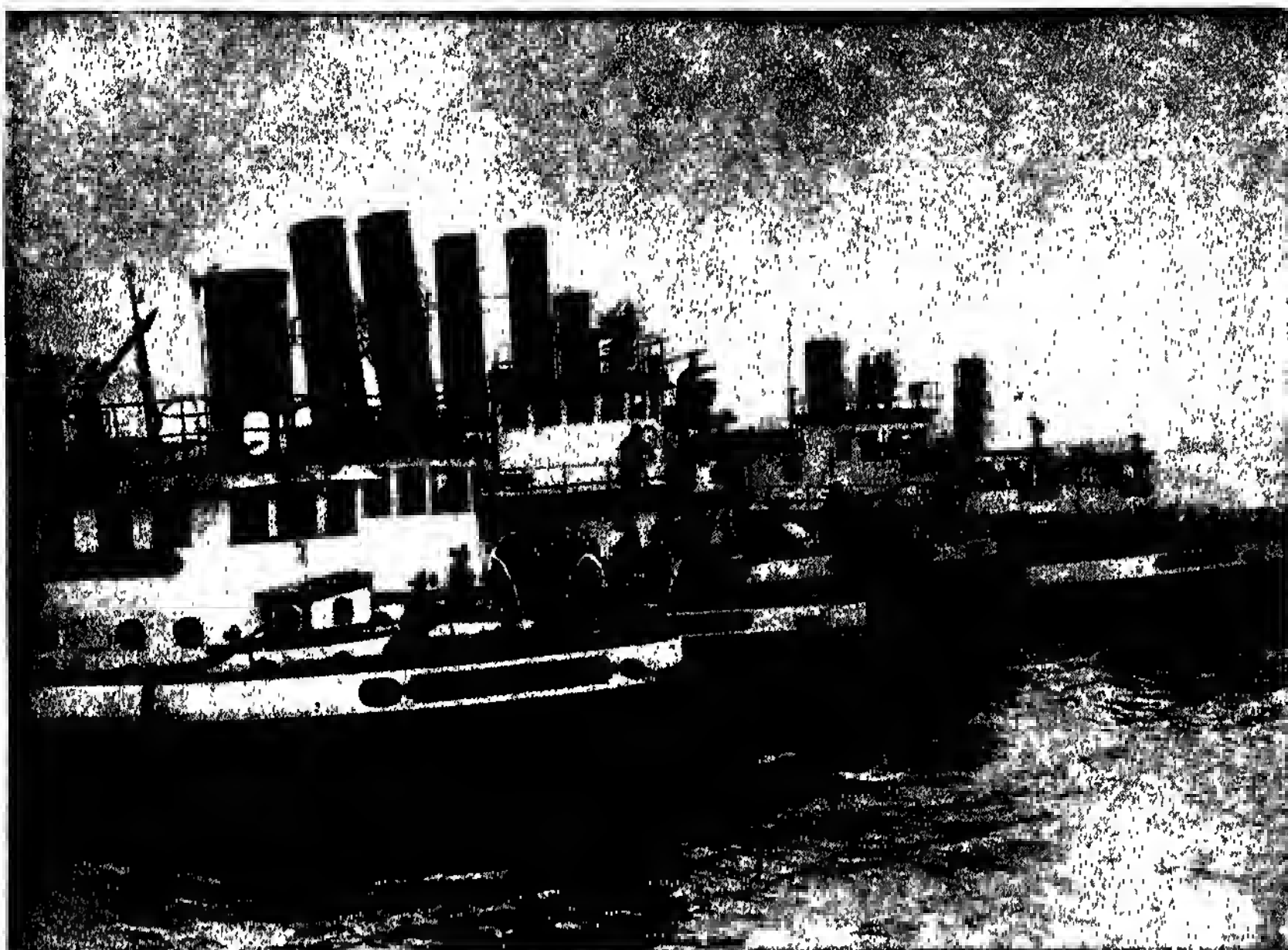


No sight is more thrilling than to see a fire engine on a city street. The galloping horses, with sparks flying from their feet, the clanging bell, the whistle, the smoke pouring from the engine, all unite to make an impression which is never forgotten. In many cities horse-drawn engines are being supplanted by motor-driven engines, like those shown below. In the largest cities an engine like this will soon be rare.



The newest fire engines are powerful motor-driven vehicles. When the fire is reached, the same engine pumps the water. Though these engines reach the fire much more quickly, and pump more water than the horse-drawn steam engines, many are sorry to see the horses go. The new is less picturesque than the old. Some of these new engines can go as fast as a racing motor car, but seldom go very rapidly.

THE GUARDIANS OF THE HARBOR



Some of the piers in New York Harbor are a fifth of a mile long, and a fire near the end, or on a ship lying beside the pier, cannot be fought to advantage from the shore. These fire boats are swift, and since they have an unlimited supply of water, can drown out any ordinary fire. Each has several nozzles.



Firemen attack a fire from every point. Some drag hose into the building if possible; others direct the water tower or send streams from the ground or an adjoining building. Here we see two firemen holding with difficulty the nozzle of a hose, which has been carried to the top of an adjoining building.

FIGHTING FIRE IN ZERO WEATHER

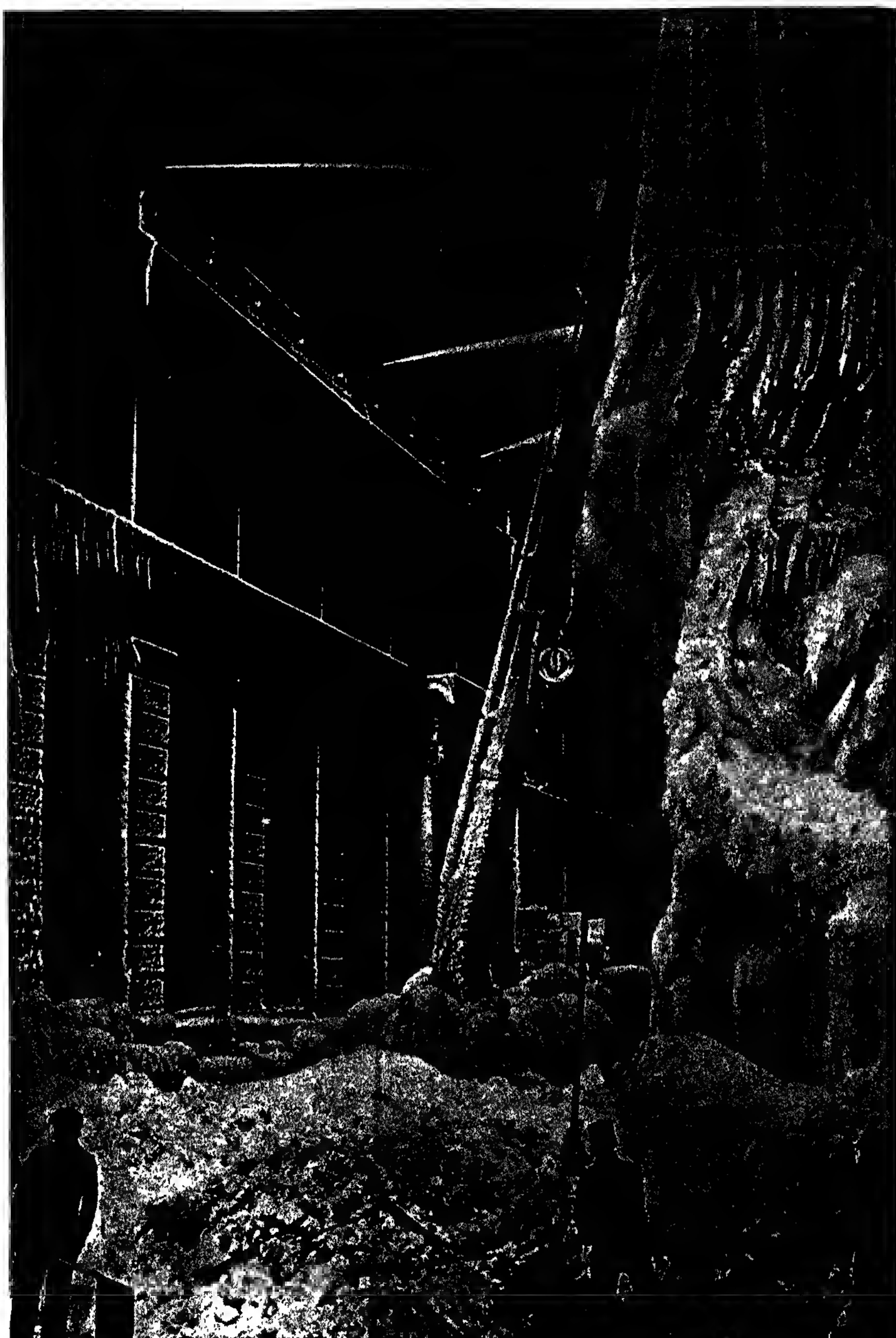


In cold weather when the wind is blowing, the spray may freeze as it falls, and add greatly both to the discomfort of the firemen, and to the difficulty of the task. Here we see that both engine and firemen are covered with ice. One moment the hardy firemen may be exposed to excessive heat and the next to terrible cold, which chills them to the bone. Such discomfort is accepted as a matter of course.



One of the most destructive fires in many years caused the destruction of the Equitable Building in New York City in January, 1912. The fire was discovered during the night, and the loss of life was small. In spite of all the efforts of the fire department, the property loss was enormous. Traffic was suspended on Broadway for several days, and trains in the subway, which here runs under the street, were stopped.

ALMOST CONQUERED BUT NOT QUITE

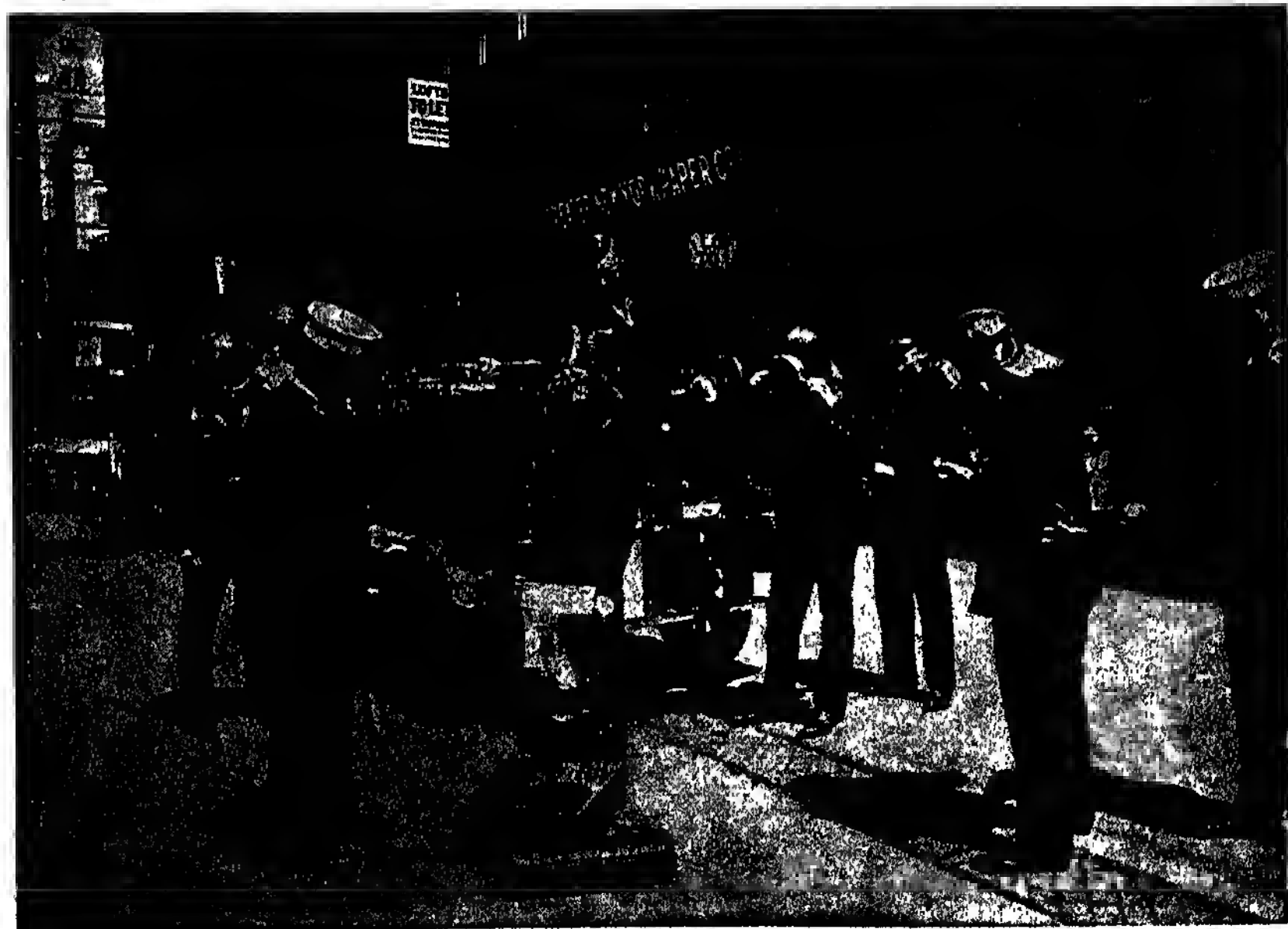


Some of the worst fires occur in the coldest weather. The fire is almost out, but several streams of water are still playing on the building from lines of hose which have been carried through the building across the street. The hook and ladder truck has been frozen to the ground and almost buried by the ice which formed while the water was being poured into the building. The fire may smoulder for days.

SAVING LIFE A FIREMAN'S DUTY



Such a scene as this is in the day's work of a fireman. If the stairway is blocked a ladder is run up to a window, firemen clamber up and bring out any who are helpless from age or sickness or who have been overcome by smoke. We see them here bringing down some one from the third story. The firemen make many daring rescues every year. Sometimes they save many in a single day, or even in a single fire.



This is one of the latest developments in rescue work. The men you see have on helmets which cover their heads and faces entirely. On their backs are cylinders which generate oxygen, and purify the air which the men breathe out. Thus equipped they can go into a building, even though it be filled with the thickest smoke, or even with poisonous fumes, without suffering any harm. They are called the "smoke squad."

A WATER TOWER IN ACTION



The water tower is a valuable aid in fighting fire. While going to the fire, it lies flat on the truck. When the fire is reached, it is raised and extended to the desired height. It can then send the water directly on the fire even if it is far back in the building. Another nozzle is on the truck.

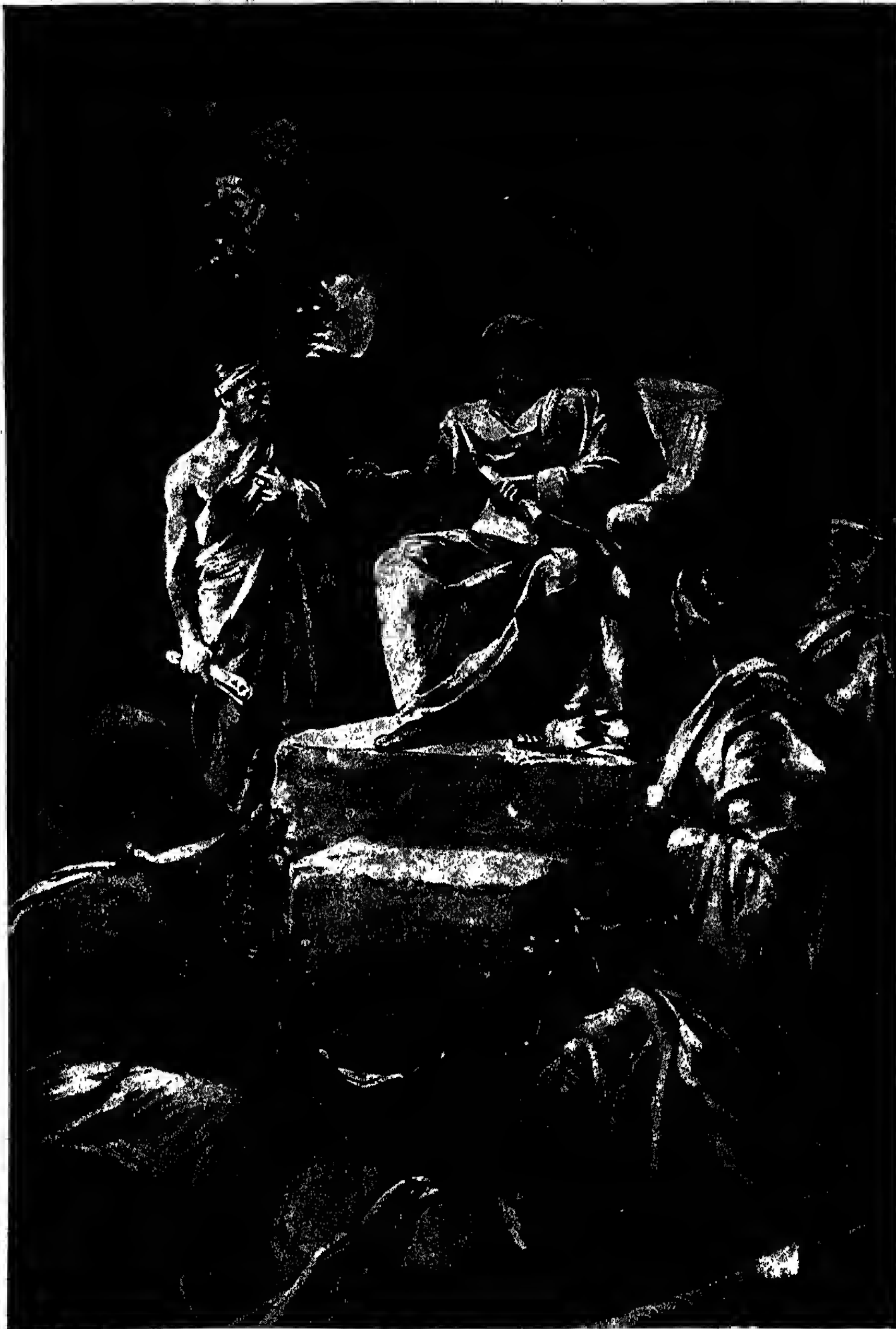
Photograph by Underwood and Underwood, New York.

FIRE BOATS SAVING THE CITY IN THE GREAT HOBOKEN FIRE



In 1900 fire broke out among the liners at their piers in Hoboken, opposite New York City, and raged fiercely. The cables which held the ships were burned, and the great vessels swung out into the stream. One drifted across to the New York side and the piers there caught. But for the wonderful work of the fire boats, it is probable that both cities would have been swept by a disastrous conflagration. In spite of all efforts, many persons in the ships lost their lives.

PLATO TEACHING IN HIS OPEN-AIR SCHOOL



Near Athens was a beautiful plantation that was called the Academy, after one of the Greek heroes, Academus, who had once owned the place. Here, amid the plane and olive trees, Plato gathered his disciples and held his open-air school, and in this picture we see him teaching his followers, many of whom were old men. After Plato died, the Academy was for many centuries still used as a place in which philosophers taught their disciples.



THE SEARCH FOR A HAPPY MAN

ONCE upon a time an Emperor of China yearned for the sight of one human being who was really happy.

"I am like the sun," he thought to himself—"like the sun, which only picks out the mountain-tops in gold, but whose beams shed no such splendor on the valleys below."

And having turned this matter over in his mind awhile, he bade his chief master of ceremonies lay before him the list of his civil servants.

The master of ceremonies bowed and departed, and soon afterwards returned, bringing with him 666 paper scrolls, each 66 yards long. And even these had barely room for all the names.

"What a formidable host!" cried the emperor, and then, pointing to a name in the list, he charged the master of ceremonies to find out what manner of man he was.

The emperor was wont to have his wishes carried out with lightning speed, and ere he had time to count 10,000, his messenger was back, and, with a very low bow, announced:

"The man about whom your august Majesty deigns to ask is Tun-Li, an old and trusted servant of yours. Honorable and discreet as an official, he is also a model father of a family."

"Then shall well-merited happi-

CONTINUED FROM 5686

ness be his portion," cried the emperor, "for I will gladden his heart with a glance of my eyes. Go, therefore, and tell him that I have vouchsafed to admit him and his family to pay homage to the Son of Heaven on the first day of the coming month."

"Assuredly Tun-Li will die of joy!" said the chief master of ceremonies.

"Nay, let us hope he may see and live," replied the good monarch, his features wreathed in smiles as he spoke. "And now go and make known my wishes."

"Well, what news?" he asked, when his messenger reappeared.

"Your most sacred will has been done, almighty Son of the Skies," replied the other, falling at the emperor's feet. "Your gracious command has been communicated to Tun-Li, with the flourish of trumpets, amid the loud acclamations of the people whose house your wisdom has exalted."

"And how did Tun-Li receive the tidings?"

"Sheer joy seems to have robbed him of his wits. Never before were such rejoicings witnessed upon earth!"

Like all things to which we look forward, the day for Tun-Li's audience seemed slow in coming, and

the emperor grew weary of waiting, for he yearned to behold a happy man.

Wherefore, one evening, disguised as a common coolie, together with a companion, he wended his way to that distant quarter of Peking where Tun-Li dwelt.

And while still afar off, he heard a noise of shouting in the house of Tun-Li.

"Can the rejoicings be indeed so great?" thought the emperor, astonished and delighted.

As he approached, the sounds grew clearer, and at last he distinguished words.

"O most wicked of wives, most despicable creature the sun ever shone upon!" shouted Tun-Li. "Accursed be the day and the hour when I wed you. Of a truth, evil spirits must have possessed me!"

"For three hundred moons have we been married," replied a woman's voice, "yet never till to-day has an angry word passed your lips. You always found me true, and never failed to praise me."

"Well, and what of it? Have we ever before been summoned to the dread presence of the emperor?" thundered Tun-Li. "But now you will cover me with disgrace—you will make me the laughing-stock of the city! What do you know of making the three-and-thirty graceful curtsies which etiquette calls for? O could I but move the earth to swallow me up for very shame of you—aye, of you and of our daughter!"

"Dearest father," sobbed Tun-Li's daughter, "have you not always said that I was your beautiful Mu-Sian?"

"Well, and what if I have? Words will not make your feet small and dainty. They are over seven inches long!" cried Tun-Li, sorely perplexed. "I am sure the emperor will die of fright when he beholds such a terrible foot!"

"O father dear, you forget that if my feet are not tiny, neither have I been brought up to be carried about in a sedan-chair," wailed poor Mu-Sian, in tears. "My feet at least serve me to walk with. And when my turn comes, I, too, shall be obliged to marry a humble and struggling official of your own rank. For have I not been trained to do work?"

Just then the gong sounded over the door, and a moneylender strode in.

"How now, Tun-Li?" he cried. "Have you thought over my terms?"

"If I agree to your terms, we must all die of hunger," hoarsely whispered Tun-Li, burying his face in his hands.

"Do as you choose, then!" retorted the moneylender. "But bear in mind that time is on the wing. Hesitate a little longer, and there will be no blue silk robe with gold-embroidered sleeves for you, no stitched silk dress for your wife, and no garment with lotus patterns for your daughter. You know my price; you must pay it or do without the things which you cannot dispense with if you are to appear before the emperor. What do you mean to do?"

"Have your way, then; I have no choice. I must do as you say," murmured Tun-Li despondently.

"Good! Let me again remind you, then, of the conditions, so that there may be no dispute later. I undertake to supply you with all you need for this Court function; you, on your part, will hand over to me three-quarters of your income on the first of each month."

"But we shall surely die of hunger, man!" cried Tun-Li, and smote his hands together in despair. "Take the half, and don't ruin us outright!"

Tun-Li, his wife, and Mu-Sian fell on their knees before the moneylender, and begged him to be content with half of Tun-Li's salary, adding: "And even then starvation will haunt us all our lives!"

But the man refused to yield.

"No; three-quarters of your income every month! That is my last word!" shouted the man. "And now yours must be either Yes or No. Which is it?"

And Tun-Li, his voice muffled till it could hardly be heard, answered:

"It shall be as you say."

"O heavens, what a scene!" muttered the unseen emperor, as he witnessed this misery in Tun-Li's home, and the tears coursed down his cheeks.

Then the emperor returned to his palace and donned his usual robes. And the chief master of ceremonies, dropping at the emperor's feet, began to address him, saying, "Almighty one."

"Let me never hear that name again," commanded the monarch, moved to wrath. "Can he be called almighty who is powerless to make one man happy?"

At this thought his eyes again grew tremulous with tears. And he thought once more, this time in sadness:

"I am indeed like the sun, which from afar illumines and warms, but when at too close quarters to the earth blights all things that live and thrive thereon."

THE MAN WHO DROVE DOWNSTAIRS

ON a high hill on the west bank of the River Danube stands the Royal Palace of the kingdom of Hungary, surrounded by the ancient city of Buda, and looking across the river at the twin city of Pesth. These two cities were united in the year 1872, and we know them as Budapesth, the capital of Hungary.

In a splendid mansion near to the Royal Palace there lived, in the beginning of the nineteenth century, one Count Sandor, a wealthy nobleman who was the proud owner of a large number of the finest horses in the country. The Hungarians, like the Russian Cossacks, have always been famed for their skill as horsemen, but Count Sandor excelled his fellow-countrymen in riding and driving his splendid steeds.

Eccentric and reckless, the count would engage in the most daring and dangerous feats, forcing his spirited horses to plunge down from rocky heights, and to clamber up almost perpendicular cliffs. When the ice of the Danube was breaking up he would cross the river from shore to shore, jumping from ice floe to ice floe. Leaping fences and walls, streams and chasms, was as nothing to this intrepid rider, and he would even leap over moving carriages at a single bound.

The guests of Count Sandor had need to be fearless, too, for they never knew on what strange coaching expedition their host might take them, or what strange pranks his horses would play them; for the count trained his horses to send their riders flying over their heads, a most unpleasant, and often dangerous, surprise

for inexperienced riders. One of the count's most reckless exploits occurred one day in the year 1827. Accompanied by a German artist, named John Presstel, and a footman, he set out from his mansion in an open carriage drawn by four of his finest horses. The winding street leading down from the rocky citadel ran past a steep flight of stone steps, which had been built to save the dwellers in the lower town a long, round-about

journey up to the centre of the town. Suddenly as they were about to pass the head of this staircase, the count calmly turned aside the leading pair of his four-in-hand, and drove team and carriage and all headlong down the stone staircase. Artist and footman held their breath, and clung hard to the sides of the carriage as the wheels bumped down the hard steps, wondering, doubtless, if the wheels would stand such a succession of violent shocks, and greatly amazed at the daring spirit of the driver. He, calm and collected, skilfully guided his four horses, and the strong and sure-footed animals held on their course, and reached the street below without acci-



The Count drove headlong down the steps.

dent. Only when the roadway had been safely reached, and the four splendidly trained animals were prancing gaily along the level ground once more, did the two passengers breathe freely. The artist, John Presstel, often sketched the daring feats of horsemanship of the count, and he added a sketch of this incident in which he had taken part to the collection of curious and striking pictures, which has been preserved for many years, and is known as the Sandor Album.

THE KING'S DAUGHTER

IN a great room, magnificent with silken hangings, a beautiful girl paced restlessly to and fro. And now and then she would pause for a moment before one of the great mirrors which paneled the walls to gaze with wide-open, searching eyes at the pale face that looked back into her own, and sigh and pass on wearily. In spite of the luxury and the care that surrounded her, in spite of the devotion of her ladies, scarce a day passed that she did not bemoan her fate. She envied the lot of her fair waiting-maids, whose laughter floated in through the window; envied the simple joys and the physical hardships of the peasant woman as she went singing past the palace.

Poor Princess! So far apart did she stand by virtue of her rank from the rest of the world, that not one companion could she boast. Alone and solitary she spent her days, till she grew weary and listless, caring for nothing, paying no heed to the efforts of her ladies when in pity they sought to arouse her. And the days passed, till gradually the meaning of whispered comments, careless words—half fears, half jests—forced itself upon her mind. Trouble was in the air.

The signs were everywhere. The guard before the palace had been doubled; restless groups of men and women gathered at street corners; ominous murmurings breathed their warning, like sullen clouds before a threatening storm.

And day by day the unrest spread. The little crowds grew and merged at last into a great multitude of people, who flung themselves against the palace gates, proclaiming their grievance with angry voices.

From her window the Princess looked down and marveled. An old man lifted his arms, and shrieked aloud as a young girl snatched a crust of bread out of his hand and ran off with it. And all at once the meaning dawned upon her. It was bread the people were clamoring for—bread for hungry men and women, food for their starving children. Bad times had come upon the land, and to whom should they appeal but to their King—to the man who had taken their all, who had ground them down, year in, year out; who had seized lands and filched the savings of the poor to swell the coffers of the rich? In their misery they called upon their King to deliver them.

But the King shut his ears and hardened his heart.

"Fire on the rabble if they will not scatter," he commanded.

The command was obeyed, and the Princess shuddered and covered her eyes. When she looked again the people had broken through the barriers, and were heaping up faggots of wood, pile upon pile, against the palace walls, shouting curses on the King who had brought this great calamity about.

And in the distance men were running quickly forward, bearing lighted torches in their hands.

The Princess started to her feet. Her eyes shone; her mind was working rapidly. Why should this terrible thing be? Food—bread was what they wanted. They were mad, frenzied, tortured by misery and hunger. Of what use was all this luxury, this costly splendor, if it were impotent now? Bread there was none. But gold there was—ornaments, jewels, plate—there was gold everywhere.

With hands that trembled she gathered the costliest pieces together, fleeing breathless from room to room; and then, clasping her treasure firmly against her beating heart, she made her way to a little secret door at the back of the palace.

Her hands sought the lock, and as the door swung back those words fell on her ears:

"Sit on your thrones and roast with your crown upon your head."

She faltered. They were desperate, dared she face them? Would they not rend her in pieces before she could make her purpose known? But while she hesitated her opportunity would be gone. She stepped out with her golden burden in her arms, to meet the mob.

"I, if I perish, perish; in the name of God I go."

Christina Rossetti, who tells the story in one of her poems, sends her out to meet the mob with these noble words, and leaves us to guess the ending. Surely the people would be so taken by surprise at the sudden apparition that there would be time to appreciate her noble action. And surely, too, so fine an impulse could not fail to have its effect on the hard heart of the King. The ending is a happy one—there could be no other.

TALES ABOUT THE TREES

WHY THE BIRCH-TREE HAS RINGS

THE birch-tree had always provided teachers with a weapon that could be used for punishing the lazy and unruly. But Hiawatha, the spirit of progress, urged the birch not to lend himself to such a purpose.

The birch, however, took no notice of the appeals of Hiawatha, so at last the spirit of progress took a bundle of the twigs and inflicted on the trunk of the tree the punishment that he had so often inflicted upon others. The whipping left marks upon the trunk of the tree, and that is why the birch has, ever since, borne rings upon its bark.

WHY POPLAR LEAVES ARE SILVER-LINED

THE great Greek hero Hercules had some splendid oxen which he had brought from Spain, but one day, when he slept, a giant named Cacus, who lived in a mountain cave, and used to plunder all the peasants round, came and drove off some of the oxen.

He dragged the animals backwards by their tails, so that their owner could not follow their foot-tracks; but Hercules happened to pass by the giant's cave with his remaining oxen, and those inside bellowed to those outside, and so the hero went in and, after slaying the giant, recaptured his oxen.

When he came out he plucked a branch of poplar from a tree and made a victor's crown, which he put on his head. Soon after his labors took him into the region of fire, and the outsides of the leaves were blackened by the thick smoke, but the under-sides were kept fresh and cool by the silvery moisture on the brow of Hercules. Ever since that time the poplar's leaves have been silver-lined, as we know them.

THE MAN WHO LOVED A CHERRY-TREE

A JAPANESE boy used to play under the shadow of a beautiful cherry-tree, and every year its fallen blossoms made a delightful carpet upon which he could sit and rest.

The boy grew up and had a family, but he always loved the cherry-tree as though it were a human being. Then one by one his relatives and friends died, and at last the man became so old and weak that it was as much as he could do to make his way to the tree. But every day he would sit and talk to it of the old days.

But, alas! one winter morning it was

seen that the tree was dying. The cold had nipped its very roots, and the poor old man was heart-broken. What could he do to save his tree? He determined to lie upon its roots all day and all night, to see whether he could not, by the warmth of his body, put new life into the tree. And on the next morning, when they went to look for the old man, they found him cold and frozen, but the tree had revived, and was putting on its garment of early blossom.

THE CYPRESS THAT MOURNS FOR EVER

CYPARISSUS, the youthful grandson of Hercules, had as a playmate a beautiful stag, of which he was passionately fond.

All their days they spent together in the woods; but one day the youth accidentally killed the stag, and his grief knew no bounds. He begged the gods that he might be allowed to remain for ever under the open sky, there to mourn his slain friend, and this wish the gods granted. In order that he might mourn without difficulty, Apollo changed the youth into a cypress, and the tree became the symbol of mourning.

THE TREE WITH HEALING IN ITS LEAVES

IN the depths of the Peruvian forest lived a tribe that fed largely upon fruit, and drew its water from a pool that never ran dry. But one night a great and strong wind blew down a number of cinchona-trees, throwing them into the pool, making the water hard and bitter, so that the tribe had to seek water from another source.

A little later two men fell ill of fever, and the native doctors gave up all hope that they would recover. They became so weak that when the tribe went some distance away to bring water for drinking and cooking the two sick men could not go. Their thirst, however, was intense, and they determined to crawl down to the pool and drink its bitter waters.

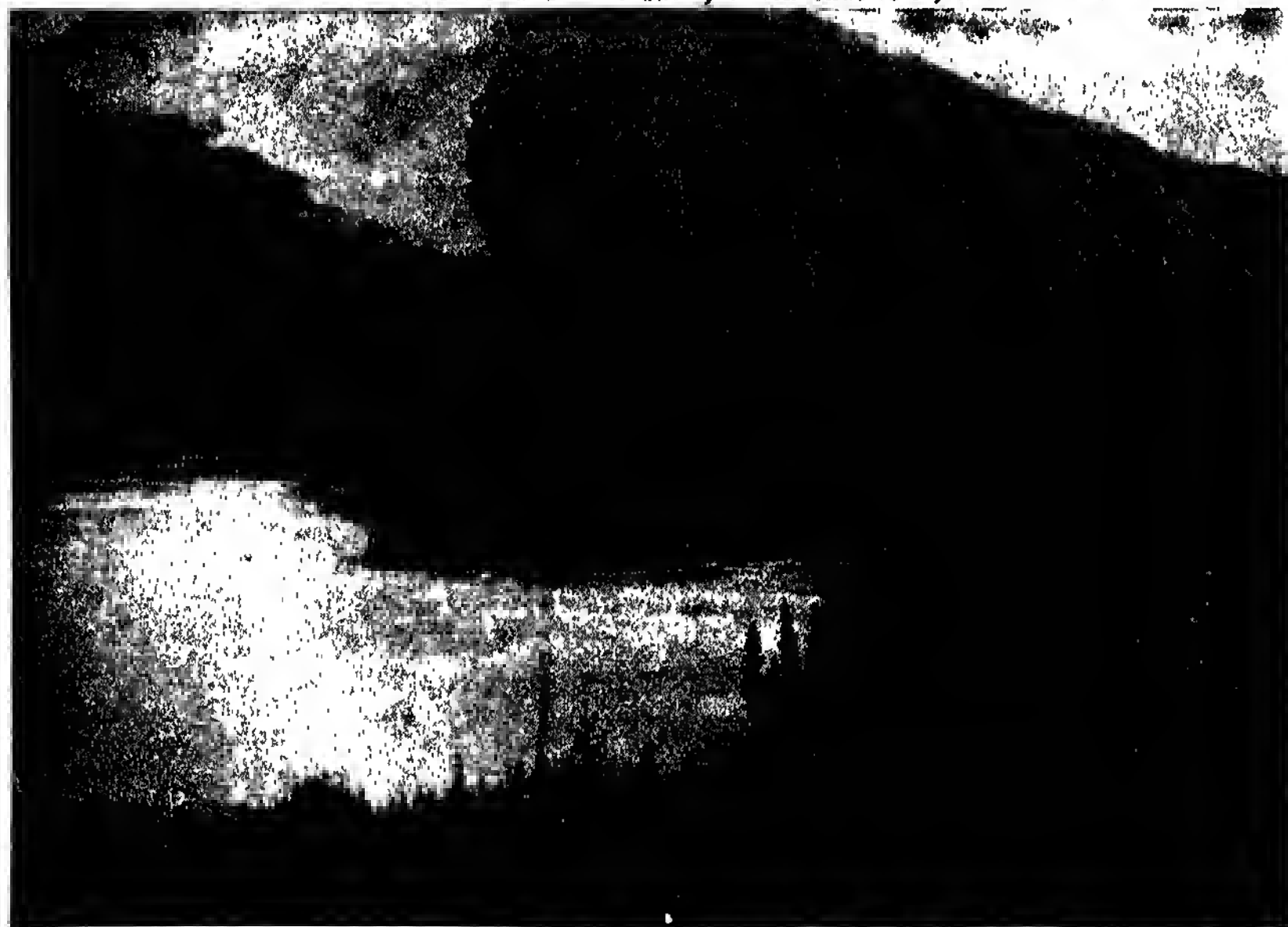
They did so, and, to their astonishment, felt better. Then they drank more, and gradually the fever left them. The wise men of the tribe knew that it must be the fallen cinchona-trees that had given the water its healing properties, and since that time Peruvian bark and quinine, which come from the cinchona-tree, have been used as medicines.

THE NEXT STORIES ARE ON PAGE 5835.

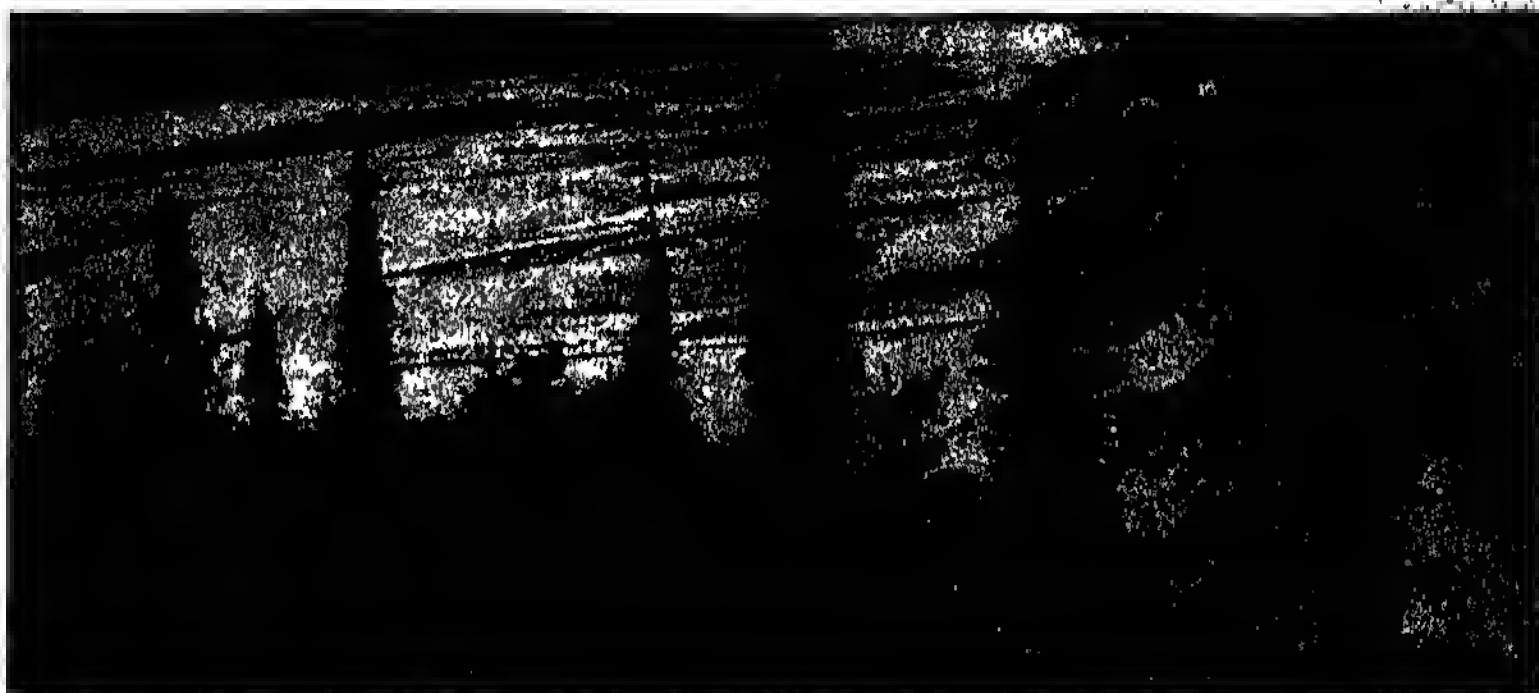
TWO GEMS OF THE ROCKIES



Among the Rocky Mountains are some beautiful sheets of water. Lake Louise, the "Lake in the Clouds," is surpassed in beauty by none of the famous lakes of which poets have sung in the past. The snow-covered mountains with forests round their bases, which shut it in, are reflected in the water.



Not far from Field, British Columbia, is Emerald Lake, which some travelers consider even more beautiful than Lake Louise. The enterprise of the railway company has built great hotels along the route, in which one may live in comfort while feasting the eyes upon the wonderful works of Nature. The name of the lake was suggested by the color of the water, which is a clear emerald green, encircled by trees. Pictures copyright, 1906, by H. C. White Co.



A MOUNTAIN STREAM IN THE ROCKIES

THE CANADIAN ROCKIES AND BEYOND

THE Rocky Mountains in Canada form a stupendous boundary line between the prairie provinces and their sister province of British Columbia, to the west. The eastern foot-hills, and the eastern slopes with their rich coal mines, are in Alberta. The boundary line runs along the great divide, and the western slopes of the mountains, and the mountains beyond them, are in British Columbia.

The provinces on the extreme east of Canada are called the Maritime Provinces. British Columbia, the province on the extreme west, might well be called by the same name. She might with equal truth be called the Forest Province, but a better name than either is the Mountain Province.

The province is seven hundred miles long, by about four hundred miles wide, and with the exception of a small portion lying about the Peace River, east of the Rocky Mountains, this whole region is mountainous. Some one has described the region as being a "Sea of Mountains." Others have compared them to the Swiss Alps, others again say they cannot be compared to any other mountain region, since every mountain range has a special character of its own.

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CONTINUED FROM 5613



Many attempts have been made to describe the Rocky Mountains, and the mountains of British Columbia, but all have failed. No language that is spoken has words that will fit their beauty and their grandeur.

Imagine, if you can, range after range of towering mountains, their peaks covered with perpetual snow, their sides clothed with evergreens and threaded with silver streams. Alpine meadows are jeweled with flowers of every hue, glaciers hang from the mountain sides, palisades of hanging snow add to the enchanting array, and everywhere the stainless white of the snow-covered peaks stands out against the sky. Mountain peak rises above mountain peak, while rushing waters and lakes give color to the scene. Steep forest-clad slopes rise through lofty glaciers. Lakes with water as clear as crystal and walled in by tremendous cliffs relieve the scene. The everlasting silence is broken only by the thunder of mighty waterfalls, or the music of cataracts of surpassing beauty. The marvelous grandeur is enriched by mountain lakes or tarns nestling among the clouds and encircled by majestic peaks.

Very often we think of the western

mountains as if all belonged to one group or range. Really there are four distinct ranges. Chief among them, of course, are the Rocky Mountains; then come the Selkirks; the Coast Range stands on the western coast, with its feet in the sea; and out beyond the mainland, the highest parts of a sunken mountain range rise above the waters of the Pacific, and are called the Island Range. In between the Selkirks and the Coast Range lies a high plateau. The mountains on the east and west of this plateau rob the clouds of their moisture, so that it receives little rain. The rivers which run through it, cut down deep below its surface, and consequently it is much less fertile than the other parts of the mountain province, and in places it is arid. There are no forests on the plateau.

THE MOUNTAIN PEAKS OF THE CANADIAN ROCKIES

The Canadian Rockies are a continuation of the United States chain of the Rocky Mountains. The average height along the American boundary is eight thousand feet, but the climax is reached between fifty and fifty-two degrees north latitude. Here the Saskatchewan and the Athabasca Rivers take their rise in the glaciers of the loftiest valleys of the range, and, breaking through the passes, flow through the Central Plain. Several peaks along the boundary reach ten thousand feet in height, but the highest of them are Mount Logan (19,939 feet), Mount Vancouver (15,617 feet), and Mount Hubbard (16,400 feet).

There are many well-known passes over the mountains, of which the most important are the Boundary (7,100 feet), the Crow's Nest (5,500 feet), the Kicking-Horse (5,300 feet), through which passes the Canadian Pacific Railway, Peace River (2,000 feet), through which flows the river of the same name, and the Tête Jaune, or Yellowhead, through which the Canadian Northern and the Grand Trunk Pacific Railways have been built.

The Rocky Mountains are correctly named, as the summits are massive edges of broken limestone, bare of soil and covered with perpetual snow. The effect of their great height is diminished on the eastern side by the rise of the foot-hills and the height of the passes. It is only on descending into the western valley that the full height is appreciated. The

western slopes are the more densely wooded. On the eastern side the slopes are partly covered with trees, partly grassy prairies and partly barren rock.

Frequently whole mountain ridges are formed of massive limestone strata uplifted and upturned on edges. Thus the mountains present to the traveler from the east abrupt and serrated outlines as they go northward. The action of the weather—snow and frost, furious tempests and summer sun—has not had time to wear them down, and their acute summit peaks tell the student of geology that they are young as mountain ranges go. The width of the Canadian Rocky Mountains at the boundary line is about sixty miles, but they gradually narrow as they go northwards. These mountains contain billions of tons of the finest bituminous and anthracite coal.

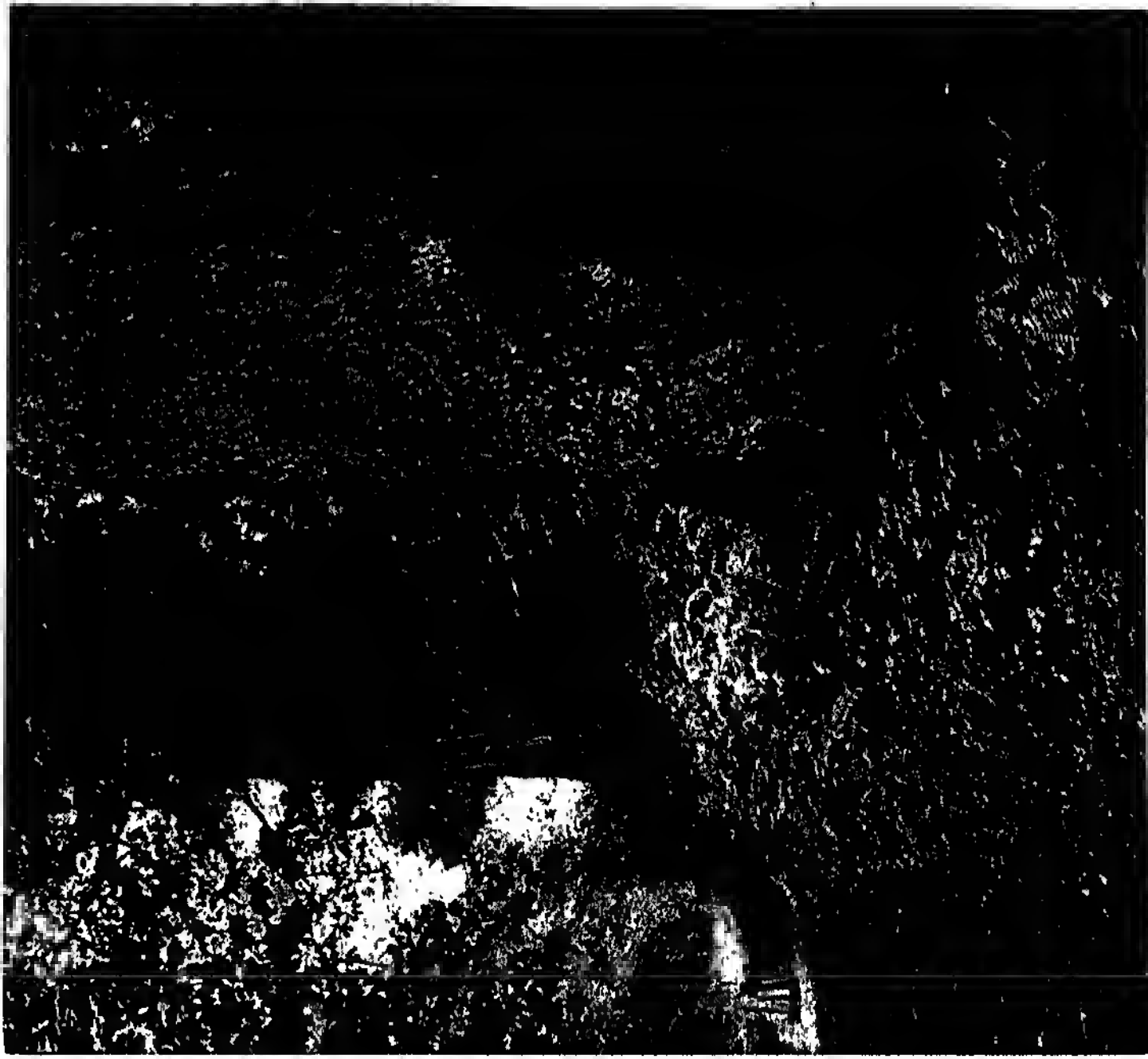
Parallel to the west of the Rocky Mountains, and sometimes under one name with them, run the Selkirk Mountains. Geologists, however, show that these mountains are older than the Rockies, and that they are formed of an entirely different series of rocks. The Selkirks, moreover, do not form a continuous range. In fact it is so broken that the range has received several names in different parts of its course. Entering from the south in a three-fold system, and divided by important valleys, the mountains have been called respectively the Purcell, the Selkirk and the Gold Mountains. The Columbia River runs northward in the deep valley, which divides the Rocky Mountains from the Selkirks, for a hundred and fifty miles. Then finding a break in the mountain range, it turns sharply to the southwest to find a way to the Pacific Ocean. North of this bend the range is called the Caribou Mountains.

The Selkirk Mountains do not reach the great height of the Rockies, but they are, if possible, more beautiful. The Columbia and the Kootenay Rivers, flowing round the mountains of the range, almost make a moat around them, as if to guard as in a fortress the treasures of gold and silver imprisoned within their rocky walls, by the forces of nature that built them. The great Illecillewaet Glacier, the Great Glacier of the Selkirks, is in these mountains. Trees grow to a height of four thousand, six thousand, and even seven thousand five hundred

ICEFIELDS AND FORESTS IN BRITISH COLUMBIA



In another part of our book you were told of glaciers, those great rivers of ice which slowly flow down from the mountains to the lowlands. Here is the great Asulkan Glacier, on the Selkirk Range in British Columbia. Crossing a glacier is dangerous as besides the slippery footing underneath, there are great cracks into which the traveler may fall. These cracks, which are called crevasses, may be many feet deep. Pictures copyright by H. C. White Co.



The lumber interests of British Columbia are very important. Near the city of Vancouver is Stanley Park, in which grow some of the finest trees in America. The climate is mild and moist and vegetation grows with almost tropical luxuriance and almost twice as quickly as it grows elsewhere. The ferns you see are very tall though because of the size of the tree you do not realize their height.

feet above sea level; and the curious sight of snow meeting evergreens is seen.

Many abrupt peaks are found in the range, but the general character of the whole chain is less serrated than the Rockies, and the mountains are more kindly to climbers. The highest peaks are Mount Sir Donald (10,645 feet), Mount Macdonald (9,440 feet) and Mount Tupper (9,030 feet), all in the central range, which is always called the Selkirks.

THE COAST RANGE, IN WHICH WILD FIORDS ARE CUT

Descending from the Gold Range, the great plateau stretches for a distance of one hundred miles, to meet the Coast Range, the great western rim of the mainland, which rises on the ocean margin, and runs northward from the Fraser River with a width of a hundred miles. These mountains are often inaccurately called the Cascade Range, but geologists have shown that the Cascade Range of the United States is different not only in composition but in geologic age. They tell us that the Coast Range is a distinct system, and consists chiefly of crystalline rocks.

The peaks of these mountains are on an average from seven to eight thousand feet high. Four important rivers, the Taku, Stikine, Nass and Skeena, break their way through them. On the seaward side, the waves of the Pacific have eaten their way, up through valley openings, far into the land, and made great fiords, which exceed the Norway fiords in grandeur. Here and there the dark green of the forest is broken by the silvery gleam of leaping cataracts. Behind the barrier of the outer hills stand the towering forms of the everlasting mountains, their outlines bathed in purple shadows, their peaks covered with snow of dazzling whiteness.

The Coast Range is richly clothed with timber, which often reaches to the water's edge. The mountains in many places run down to the sea, in rugged spurs which rise boldly out of the sea in giant headlands and, lining the shores of the fiords with precipitous walls, show the full measure of their height to the observer, and leave on his mind an abiding picture of lonely majesty.

Between the Coast Range and the Island Range, the lower land has been submerged, and only the high land of Vancouver Island, and Queen Charlotte

Islands rises above the ocean. Queen Charlotte Islands are a mountain group, in which gold, copper and iron ore, and anthracite coal are found. The island of Vancouver, which is much larger, has a length of two hundred and eighty-five miles. A chain of mountains runs through it. The western coast is indented with fiords, and lakes, rivers, forests and fertile farm lands add to its beauty. Gold, copper, iron and coal are found on the island. A national park, called Strathcona Park, has been set apart in the mountain region.

Fishing, mining and lumbering are the chief industries of British Columbia. The story of the mines and fisheries, however, belongs to another place and we shall not speak of them here. The lumbering industry, although it is large, is only in its infancy, for the forests are enormous and much of the mountain area can be used only as forest land. The people realize this fact, and the government of the province has already taken wise steps to conserve the timber.

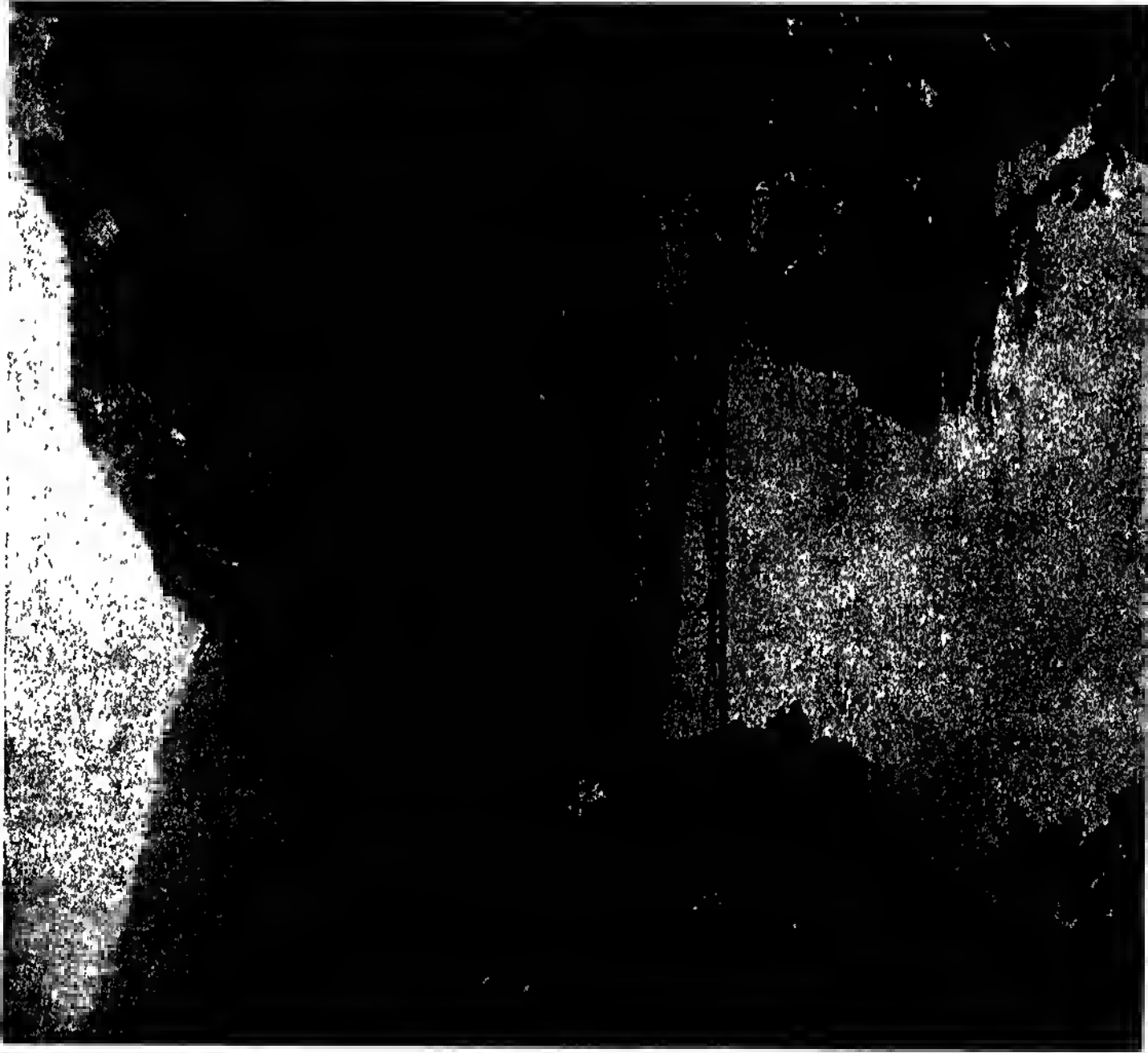
Agriculture is not neglected. At one time the efforts of farmers were chiefly turned to cattle ranching, but, of late years, mixed farming has grown in favor, particularly in the rich river valleys, and a number of creameries are in operation. Fruit farming has proved very successful, and British Columbia apples especially have become famous.

IMPORTANT CITIES OF THE FAR CANADIAN WEST

Victoria, in Vancouver Island, is the capital of the province. It is the oldest city of the province; and has the distinction of having been founded in Hudson's Bay Company days, when it was known as Fort Camososuu. The city, with its wide, quiet streets, and private residences surrounded with small parks, has little in common with the average western city. Flowers bloom in its gardens the year round, and its delightful climate, and the beautiful scenery which surrounds it, make it a pleasant place in which to live. The observatory at Victoria possesses one of the finest telescopes on the continent. The city, which is built on the southeastern end of the island, has a fine harbor.

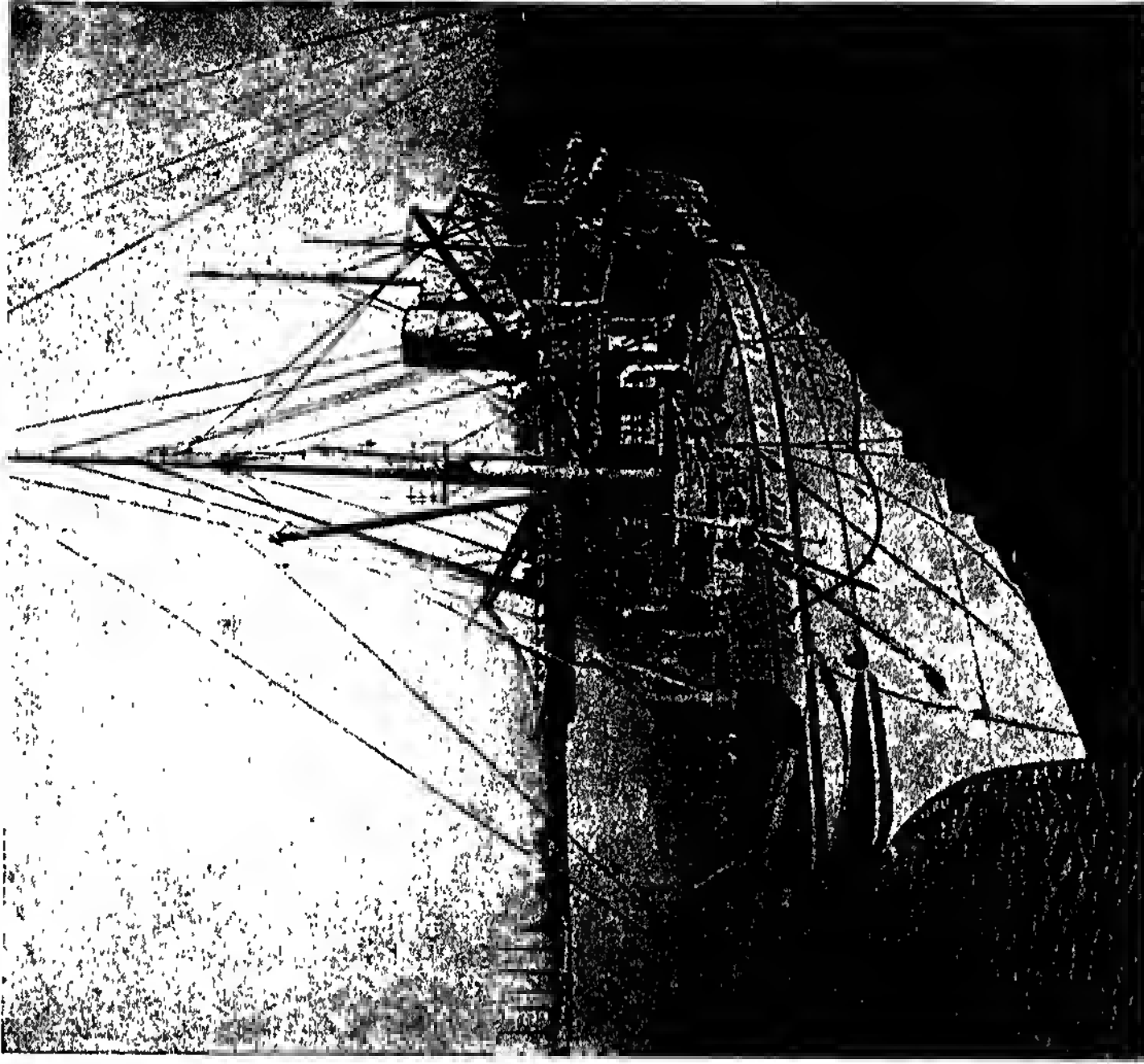
Vancouver, on the mainland, about eighty miles across the strait from Victoria, is the commercial capital of the province, and has all the marks of a

MOUNTAIN AND SEA IN THE CANADIAN WEST



The Fraser River in British Columbia is rugged and swift for the greater part of its length, as it winds and twists along the way it has cut through the mountains. This graceful suspension bridge, which seems hardly able to bear the weight of a doll, is called Caribou Bridge and is strong enough for heavy traffic. Some parts of the river are navigable, other parts are so turbulent that boats cannot be used.

Pictures copyright by H. C. White Co.



Vancouver is rapidly becoming one of the important ports of the world. From its wharves steamers go to every part of the world. This is the steamship Empress of China, built for trade with the Far East, where one can transfer to another ship under the British flag for the journey to Europe through the Panama Canal and across the Atlantic. Vancouver was founded in 1828 by the Hudson's Bay Company.

bustling western city. This child of the Canadian Pacific Railway does not appear on the census of 1881, for it was then the site only of giant firs and cedars, some of which survive in its beautiful park. It is a thriving, progressive city, full to overflowing with wonderful vim and enterprise. The provincial university is here; and the public buildings, business blocks, churches, schools, libraries and clubs are equal to those of the older cities of the east. Vancouver is beautifully situated on the shores of

has an excellent harbor. It is the centre of an agricultural district, and in addition has huge lumber mills, and many large manufactories, while a large number of salmon canneries have been built near it.

Nelson, in the heart of the Selkirk Mountains, is important as being the centre of a large mining district.

Prince Rupert, over five hundred miles to the north of Vancouver, may, like Vancouver, be said to be the child of the Canadian railway system, for it practically owes its existence to the fact that it



This shows the valley of the Kicking Horse, the great pass over the Rockies through which the Bow River reaches the prairie. The Canadian Pacific Railway is built through this pass, and follows the winding of the Bow for many miles. This picture and the other pictures in this story give us an idea of the grandeur of the scenery in these great mountains.

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Burrard Inlet, one of the deep fiords of the coast. The Inlet is a half mile wide at its mouth, and opens out to two miles in front of the city. It makes Vancouver Harbor, landlocked, sheltered from all points, deep enough for all vessels, open all winter, one of the finest harbors in the world.

Both these cities have connections by land and sea with all important points on the coast and in the interior, and steamship lines keep them in close touch with Japan and the dominions of New Zealand and Australia.

New Westminster, an important city near the mouth of the Fraser River, also

is the terminus of the Grand Trunk Pacific. Like Victoria, it is built on an island, has a mild climate and a fine harbor, and is becoming an important seaport.

The three great transcontinental lines of the Dominion run through the great western mountain ranges, and have broken down the barriers which they raised between British Columbia and the other provinces. In addition they brought the knowledge of the mountains to the world, and the region is rapidly becoming one of the favorite playgrounds, not only of the Dominion, but of all the northern continent.

THE NEXT STORY OF CANADA IS ON PAGE 5941.

SCENES IN BRITISH COLUMBIA

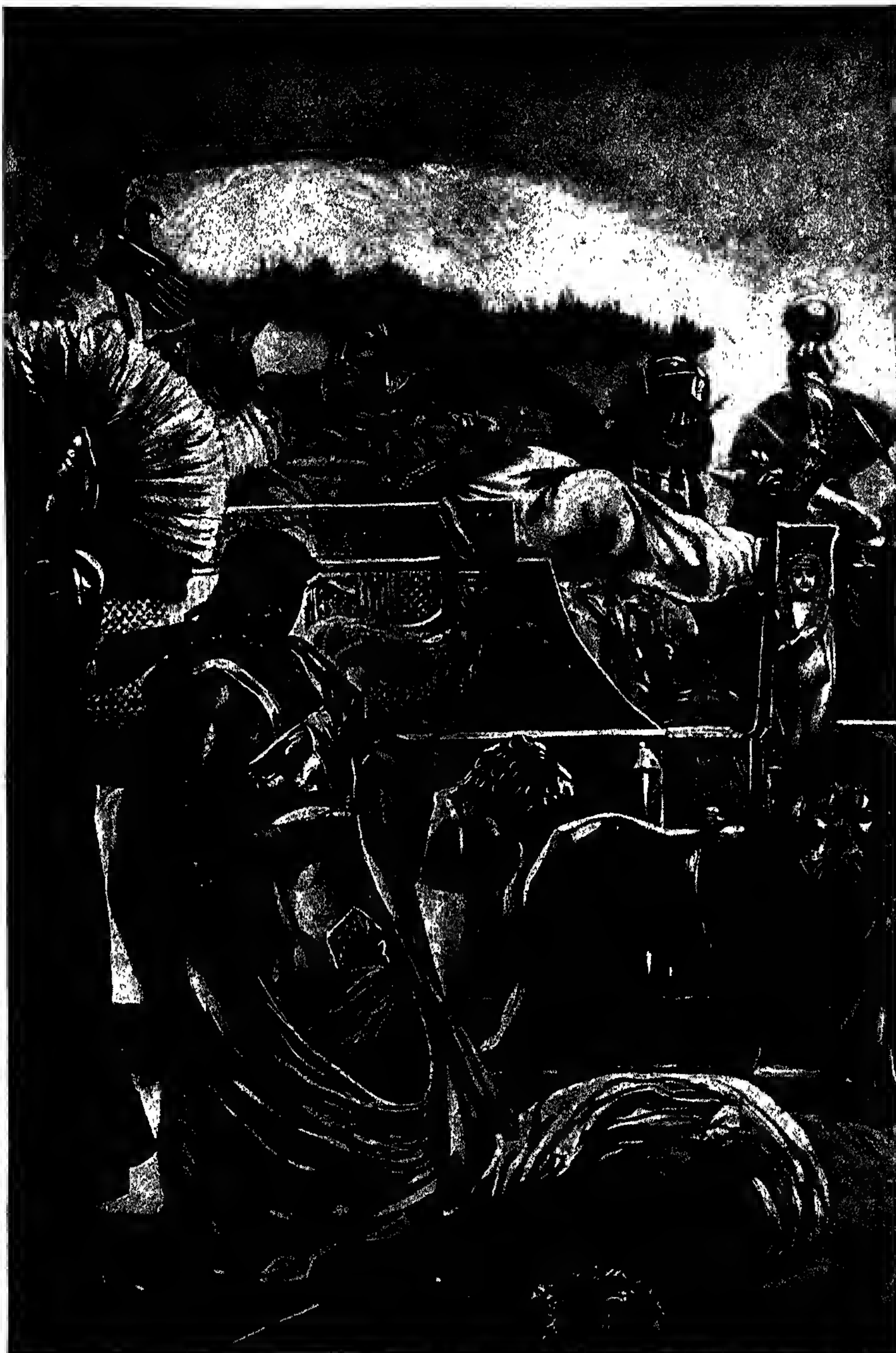


The city of Victoria, which is well situated on the island of Vancouver, is an important city, and the seat of the government of the province of British Columbia. This picture of a pleasant part of the water-front gives an idea of the comfort of the city, of its well-paved streets and well-built houses. Victoria has a fine harbor and does a large Oriental trade. The city was founded in 1852 and was incorporated ten years later.



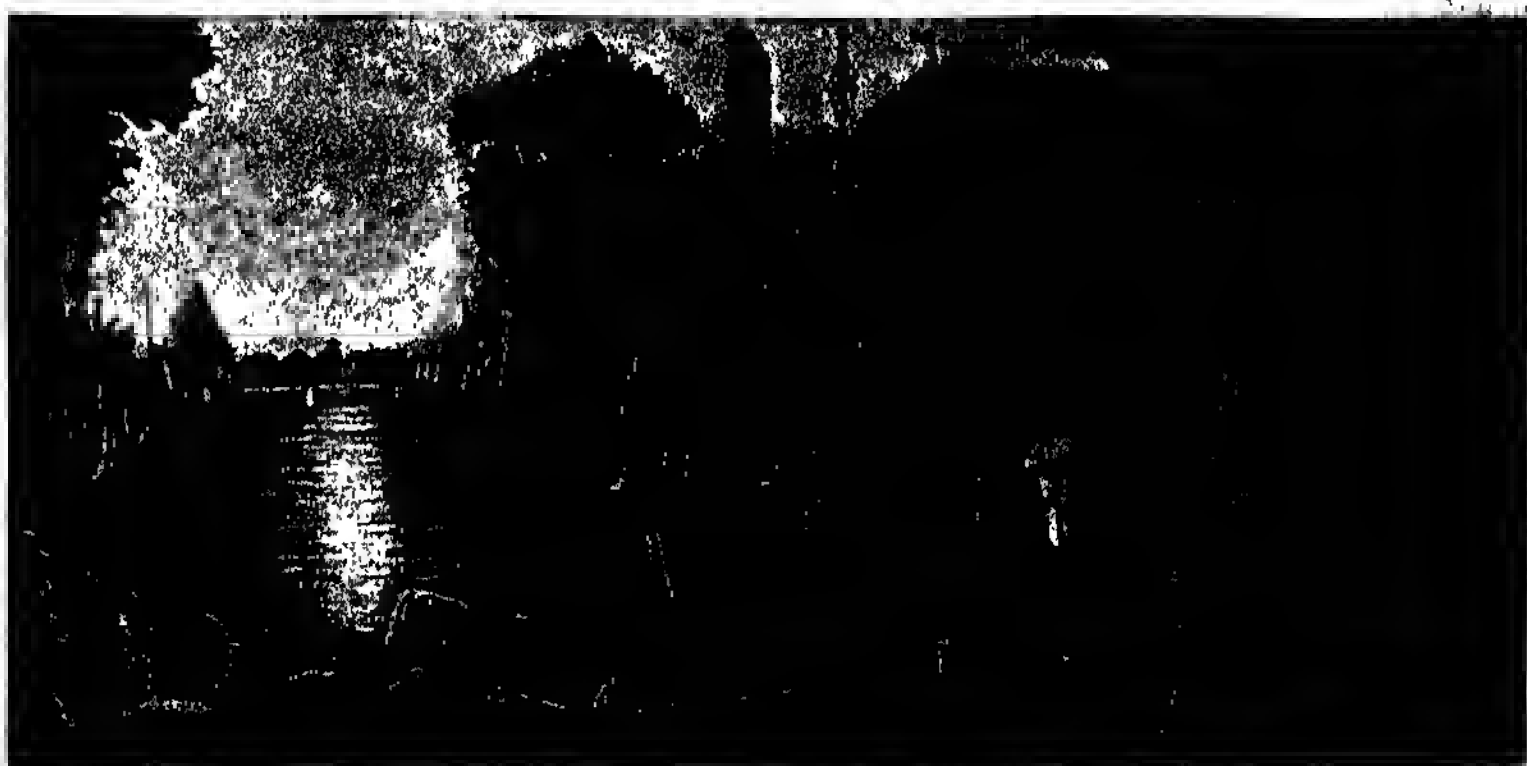
This picture shows how the melting snows send down streams to swell the rivers. The river in the foreground shows how the water cuts into the soil, and carries it away to deposit it on lower ground. If the mountain were not covered with forest, the erosion, as this process of wearing down is called, would be much more rapid. There are many scenes like this along the railways through the Rocky Mountains.

CLEOPATRA IN ALL HER SPLENDOUR



PRISONERS OF WAR BEING BROUGHT BEFORE CLEOPATRA, WHO IS SEATED IN HER CHARIOT

The Book of MEN & WOMEN



CLEOPATRA OF THE NILE THE LAST QUEEN OF EGYPT

THE wit and beauty of a woman may be dangerous unless the woman has goodness also. In ancient times there were many beautiful and brilliant women, but these women helped, very often, only to make men worse, instead of making them better and nobler. Their wickedness was not regarded as misdoing. It was considered no worse for the famous women of the ancient world to live bad, selfish lives than it was, many centuries later, for Queen Elizabeth to bless the ships which were going to capture men, women, and children to sell them as slaves. There was less excuse for Queen Elizabeth than there was for the women of olden times. Let us, in charity, remember this now that we come to the amazing story of Cleopatra.

Cleopatra was born heiress to the throne of Egypt; the day came when she helped to rule half of the world. She was a daughter of the house of Ptolemy, from which the kings of Egypt had come for nearly three hundred years, and she was born to rule over the land which Moses ruled for Pharaoh. Her birth occurred sixty-nine years before the birth of Christ, and the king, her father, loved her.

CONTINUED FROM 5680



The young princess grew up lovely beyond comparison, and learned beyond, perhaps, all other women of her age. She was a Greek in blood, she was Greek in beauty, she was Greek in learning, but her natural talent was a blend of ancient Egypt, of which she was a daughter, of refined Greece, and of the more modern culture of Rome, which then ruled nearly all the known world.

All that the scholarship of the greatest professors could teach her, Cleopatra learned, but no teaching can give wit. Wit was born in her, wit and natural grace and all that charm which cannot be described, but which we often find in a gifted woman. She grew up in the greatest centre of learning in the world. Her home was Alexandria, the capital of Egypt. The city had been founded by Alexander the Great, and called after his name. In Cleopatra's day it was a city of libraries and schools, museums and palaces of art. To Alexandria flocked learned men from all parts of the earth. In art and philosophy and science Alexandria at one time stood alone in the world; there was no place to compare with it. Its doctors were the greatest that the world had seen.

When Alexandria's greatness fell, half the knowledge of the world was blotted out. It took us many hundreds of years to relearn many of the great secrets which the learned surgeons and doctors of Alexandria had mastered. The library of Alexandria was the most famous in the world, and when it was destroyed the intellectual life of the world suffered a loss which we cannot measure. Although the greatness and power of Egypt had been almost lost before Cleopatra was born, much of its splendor and its learning remained. But its kings were weak and the magnificence of the court covered cruelty and wickedness. This, then, was the scene in the centre of which the beautiful young princess grew up.

Even when Cleopatra was only fourteen, she was famous for her beauty and learning. She could speak, so we are told, seven or eight languages, she was very musical, she knew history, and thoroughly understood politics and philosophy and art; she was quite a wonderful girl. When she was seventeen, her father died, and in accordance with the Egyptian custom, left the kingdom as a joint inheritance to her and her brother Ptolemy. Ptolemy was only a boy of twelve years old, and Cleopatra, who had a strong and vigorous mind, ruled for two years. But Ptolemy wished to have the power for himself. He declined to share the power with his sister, and as soon as he was able he pushed her off the throne. Possibly his advisers were more responsible than he; they did not like the daring spirit in which she sought to conduct the government of the country. Be that as it may, Cleopatra found it necessary to retire into Syria. But her proud spirit would not accept defeat like this; and she at once made preparations to regain her lost kingdom by force of arms.

Rome was mistress of the world. Egypt was still independent, but the claimants to the throne had already learned to go to Rome for help, and the Romans well knew the weakness of the kingdom. When this quarrel between Cleopatra and her brother Ptolemy arose, there was a similar struggle going on in Rome for mastery. Julius Cæsar had been for ten years away from Rome. He had conquered Gaul and invaded Britain. By his conquest of Gaul he had paved the way for the civilization of the world to

the west. Other great Romans had been content to take their armies eastward, where easy conquests were to be won. While Cæsar was away, Pompey, as we read on page 5280, became his rival, and the power of Cæsar, whose conquests had won him great popularity and fame, was in danger. So he marched into Rome, and when Pompey fled, Cæsar followed him, and defeated him at the great battle of Pharsalia.

Pompey fled to Egypt, and there Cæsar followed him, to find the kingdom divided in the way we have seen. He determined to put an end to the struggle one way or another, lest war and unrest should spread into Roman dominions. Cleopatra determined to win him to her side. She was afraid to go openly to Cæsar's palace, so she had herself concealed in a roll of carpet. This was carried into the presence of Cæsar, and out she sprang. Such a vision of loveliness Cæsar had never before beheld—Cleopatra at nineteen, beautiful beyond words, gifted with all the arts and accomplishments that make a woman powerful. Cæsar's heart went out to the beautiful young queen, and he decided not only that the possession of the Egyptian throne should be settled, but that it should be settled in her favor. As Ptolemy and his advisers still refused to restore her to the throne, Cæsar made war upon them, and in the battle Ptolemy was killed.

But the man who had restored her to her throne loved her, and she loved him; and when he returned to Rome she soon afterwards followed him. Her presence in Rome as the lover of Cæsar created much scandal, even in that wicked city; but she stayed in defiance of it, fearing nothing so long as Cæsar, now the ruler of the world, was on her side. But, as we all know, Cæsar was murdered, and Cleopatra, lacking a protector, returned at once to her own country.

After Cæsar's death the power of the republic was again divided among three men. One was Caius Octavius, who was afterwards the Emperor Augustus; the second was Lepidus, who in five years was pushed out of the way; the third was Mark Antony, who, while Cleopatra was in Rome, had admired her beauty and charm. Octavius, who was the grandson of Cæsar's sister, had been adopted by Cæsar, and though he was only twenty at Cæsar's death, he showed great talent,

MARK ANTONY APPROACHES CLEOPATRA SEATED IN HER GALLEY



AT THE FIRST SIGHT OF THE EGYPTIAN QUEEN, MARK ANTONY WAS FASCINATED BY HER BEAUTY, AND FOR HER HE GAVE UP THE EMPIRE OF THE WORLD

This picture is from the painting by Sir Lawrence Alma-Tadema, R.A., and is reproduced by permission of the Berlin Photographic Company.

though not great humanity. But for this, Antony, who made the memorable speech over Cæsar's dead body of which we are told in Shakespeare, would himself have become sole ruler. But it was not to be. Just as Cæsar had met the lovely Queen of the Nile, so did Mark Antony. War followed Cæsar's death, and at the end of it Antony, who was in Cilicia, Asia Minor, sent for the queen, to make her account for something which she had done during the war which he regarded as unfavorable to Rome.

CLEOPATRA'S VOYAGE ON THE CYDNUS

Instead of going as a penitent, she went in triumph. She sailed up the River Cydnus in state. It was in this river that Alexander the Great nearly lost his life. It was this voyage of Cleopatra up the Cydnus which cost Antony his power and half the world. There never was before, or since, such a procession as that of Cleopatra to see the great soldier and ruler who had meant to take her to task for what she was supposed to have done. She sailed like a goddess in a magnificent galley. It is said that part of the vessel was covered with gold, the sails were of purple, and the oars were of silver. The rowers rowed in time to the sweet strains of flutes and pipes and harps. Cleopatra lay under a canopy embroidered with gold, arrayed as a goddess; while rosy, dimpled boys gently fanned her.

When she arrived, Antony sent to invite her to supper; but she refused to go, saying that it was his duty to wait upon her, and Antony went. He was amazed at the reception she gave him, and the banquet she spread before him, the thousands of lights and splendors such as he, a man of the camp, had never before witnessed. He fell completely in love with her, as Cæsar had done, and neglected the affairs of the empire to return with her to Alexandria. In Alexandria they lived a life of the greatest luxury and extravagance, giving banquets and feasts such as even Alexandria had not previously known, but the story that Cleopatra dissolved pearls in vinegar or wine is, of course, not to be believed.

Together they rode, and hunted, and fished, and held reviews of the troops. When Antony was gay, Cleopatra made him more gay; when he was sad, she enlivened him with jest and music. At night she would go out with him, dis-

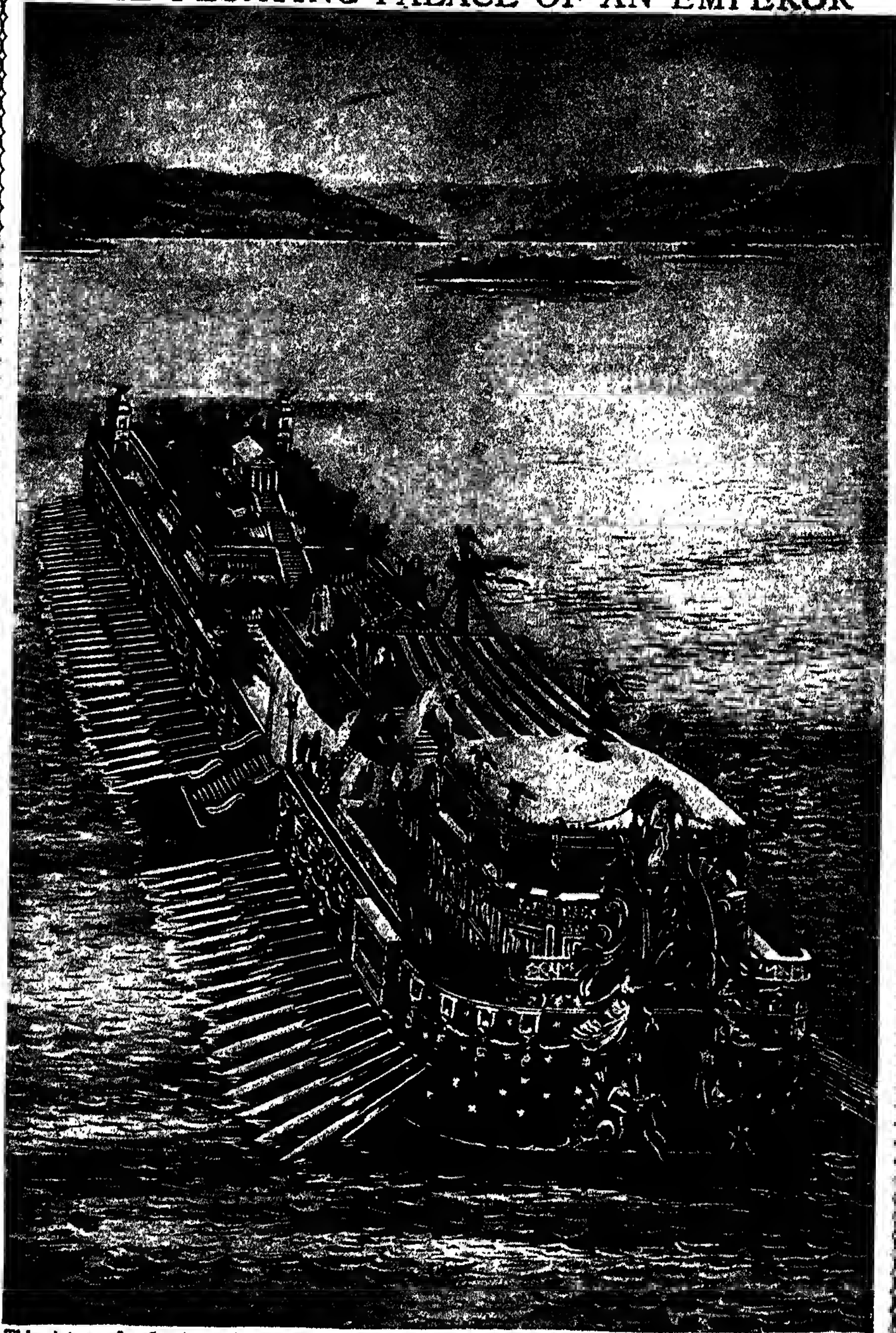
guised as a servant, and he would put on similar clothing. They roamed together like thoughtless children, though she was queen of the land and he was ruler of half the known world. In her presence he forgot his manhood and his great responsibilities. They were out fishing one day, and Antony was unlucky. This, he thought, must disgrace him in the eyes of Cleopatra, so he ordered one of his men to slip secretly into the water, and to put on his hook fish which had already been caught. Cleopatra discovered the trick as fish after fish was brought up. She was too clever to let him think she had noticed it, and, instead, she expressed her surprise, and called the people's attention to his skill. Next day she called the people to see a fresh display by Antony as a fisherman. The vessel was crowded when Antony sat down to fish. As soon as he let down his line, Cleopatra quietly ordered one of her divers to put a salted fish on his hook. This Antony drew up, pretending that he had caught it; but the trick was discovered, amid shouts of laughter from the people.

At last Antony was recalled to Rome, where his family were at war with Octavius. He remained away from Egypt for three years, and in this time he married Octavia, the sister of Octavius. She was a good and noble woman, and made Antony a good wife, but, at the end of three years, war called Antony to the East again. He had hardly started before his thoughts turned to Cleopatra. He had set out to make war on the Parthians, but he gave up the war for the sake of the Egyptian beauty. She was probably glad to be able to exert her old power over him, and, by so doing, keep Egypt an independent kingdom. It needed but a word from Antony to have made it a miserable province of Rome—as, a few years later, it actually became.

He welcomed her with joy. He gave her Phœnicia, Syria, Cilicia, and a part of Judea and Arabia. But the countries were really not his to give; they belonged to the Roman nation.

The same life of extravagance and pleasure followed; there was no thought of serious duty, all attention was given to luxury and slothful ease. Antony's conduct roused the Romans, and Octavius now resolved to reign alone. This led to civil war again.

THE FLOATING PALACE OF AN EMPEROR



This picture of a floating palace built by the Roman Emperor Caligula gives some idea of the magnificence of Cleopatra's galley, for Caligula's remarkable vessel, the remains of which lie under the waters of Lake Nemi, in Italy, was probably made after the model of a galley belonging to one of Cleopatra's forefathers.

In preparation for the war, Cleopatra provided Antony with two hundred ships, and money which, in our coinage, would amount to about twenty million dollars.

HOW CLEOPATRA FLED FROM THE BATTLE OF ACTIUM

Octavius advanced to meet him with a much smaller force, but his soldiers were in better training, because they had

the day were about to turn, Cleopatra, thinking that he was defeated, suddenly sailed away with her ships for Egypt. So much was Antony under her bad influence that he, the bravest soldier of Rome, actually deserted his fleet and followed the queen.

Antony hoped to find other troops faithful to him, though how he could

expect such a thing, considering that he had fallen through his own fault, it is hard to understand. With his fall, the fate of Cleopatra seemed sealed, but she tried to make peace with Rome. Octavius caused it to be known that the only way in which she could win his favor was by her having Antony killed. What her answer to this proposal was we do not know, but it was evident that the end was near. Antony discovered that she had betrayed him to those against whom he had fought only for her sake.

Cleopatra, in an agony of fear, fled to a great tomb which she had prepared for herself, and caused a report to be sent to him that she was dead. Hearing this, Antony was



CLEOPATRA ON THE NILE

not been spoiled by luxury and laziness. Antony desired to fight on land, as he should have done, but Cleopatra, who accompanied him, persuaded him to fight at sea. This he did—at Actium, off the coast of Greece. It was one of the greatest battles of ancient times, but Antony ought to have won it. He must have won had he been fighting in a just cause. But just when the fortunes of

heart-broken. He had with him a servant named Eros, who was under promise to kill him should Antony beg him to do so. Antony now called upon Eros to perform his vow. Eros drew his sword as if to slay his master, but, turning aside, he plunged the sword into his own bosom and died.

"This was greatly done, Eros," said Antony. "Thy heart would not permit thee to kill thy master, but thou hast

CLEOPATRA OF THE NILE

taught him by thy example what to do." He drew his sword and fell upon it. The blow was not at once fatal, and he begged those around to end his life. They fled from him, but a servant of Cleopatra drew near and said that she had sent for him. Hearing that Cleopatra was not dead, the spirit of the dying man revived, and he was carried, dying, to the tomb where she had hidden herself. She feared that if she opened the door, her enemies would rush in and overpower her; so she let down a cord and with the aid of her waiting women drew him up into the tomb, and there he died.

Meantime Octavius, who had followed Antony's retreat, was outside the city walls, where he was joined by Antony's deserting army. By a trick, a messenger sent by Octavius succeeded in taking Cleopatra prisoner, and immediately afterward the conqueror entered the city. But he wished to take Cleopatra in triumph to Rome, and to lull her fears, he treated her with honor, while at the same time he had her carefully guarded lest she should slay herself.

THE DEATH OF CLEOPATRA

He went to see her, professed great sympathy for her sorrow at the death of Antony, and permitted her to bury the dead soldier with splendor. But Cleopatra heard of Octavius' intentions to take her to Rome to grace his triumphal entry into the city, and determined to frustrate it.

She begged leave to go for the last time to visit Antony's tomb, and there she took a touching farewell of the dead. Then she dressed herself in her most beautiful garments, ordered supper, and sat down to eat it.

When Caesar's officers returned, they found Cleopatra lying dead on a bed of

gold. One of her waiting women also lay dead on the ground beside her. The other, who was placing the crown on her dead mistress' head, was dying, and died soon afterward. It is not known how Cleopatra succeeded in taking her life. One story is that she died from the bite of a venomous serpent, which was brought to her by a countryman hidden in a basket of figs, and this is the story that



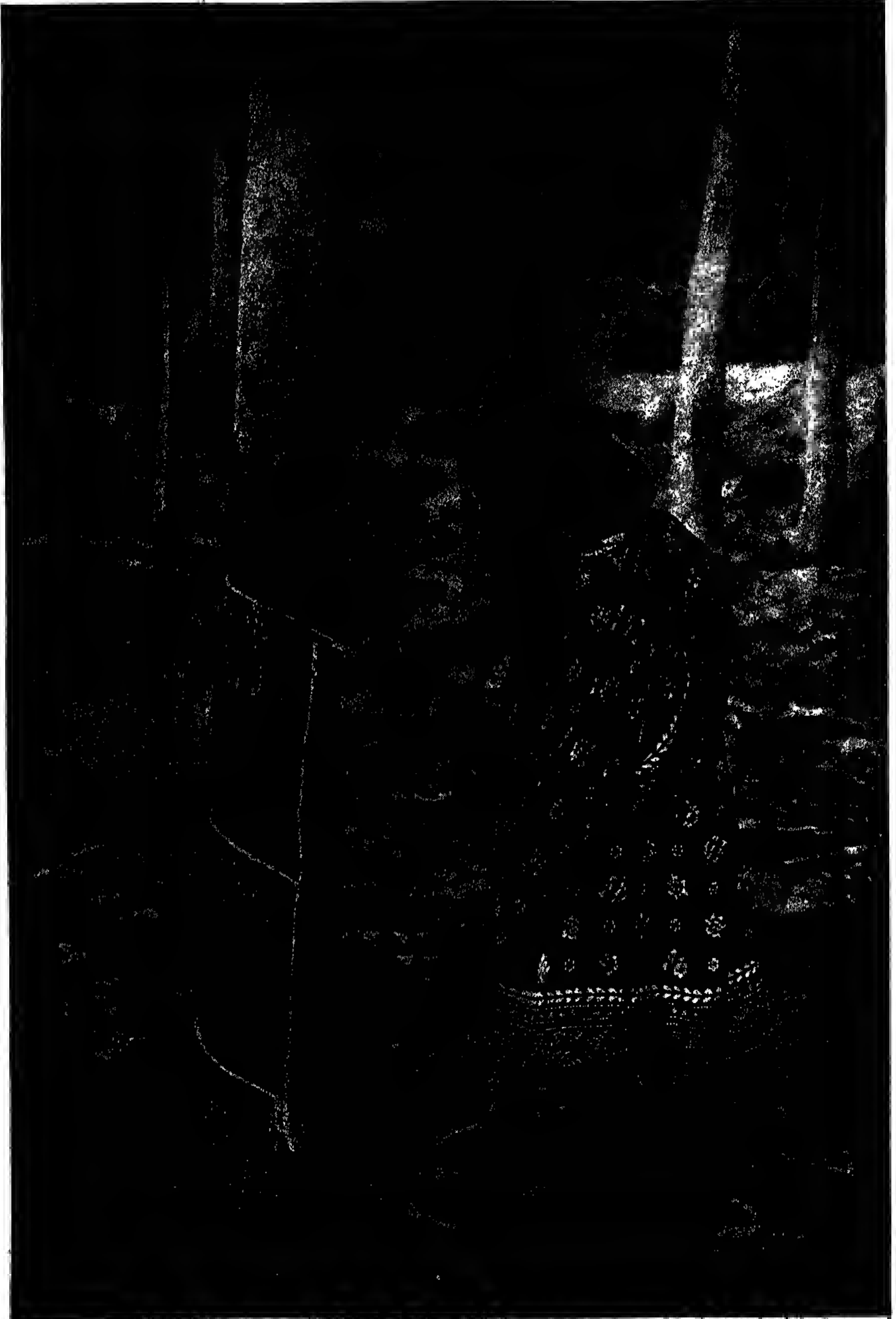
CLEOPATRA DROPPING A PEARL INTO A GOBLET OF WINE

Shakespeare believed, and is the tale that he made the Roman soldiers tell in the play of Antony and Cleopatra.

Cleopatra, who was only thirty-nine when she died, in the year 30 B. C., was the last Queen of Egypt. She was buried with all fitting pomp, and with her was buried the last trace of the ancient power of Egypt. From that time down through all the centuries to our own, the country has been nothing greater than a province in a larger empire.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 5849.

DRAWING MILK FROM A TREE TO MAKE RUBBER



Here we see a native girl tapping a rubber tree in Ceylon. Holes or grooves are cut in the trunk of the tree, and in a few hours milky juice flows out and is caught in cups or tins. A good tree yields about twenty gallons of juice in a season, producing forty pounds of rubber. The juice is called caoutchouc, a native Indian word.

Deus vult—God wills it; the battle-cry of the Crusaders: Latin.

Dies iræ—The day of wrath; the Judgment Day: Latin.

Dieu défend le droit—God defends the right: French.

Dieu et mon droit—God and my right; the motto on the Royal arms of the British Sovereign: French.

Dit—Called, said: French.

Dolce far niente—Sweet doing nothing: Italian.

Domine, dirige nos—Lord, guide us; the motto of London, England: Latin.

Donnerwetter—Thunderstorms; used as an ejaculation, as, for instance, "Great Scott," in English: German.

Double entente—Double meaning: French.

Dramatis personæ—Characters in a play: Latin.

Dulce "domum"—Sweet "homewards"; from a Winchester (England) school song: Latin.

Dum spiro, spero—While I breathe, I hope: Latin.

Eau sucrée—Sugared water: French.

Ecce homo—Behold the man! The expression used by Pilate when Christ appeared before the mob; also the title of a book by Sir J. R. Seeley, and of famous paintings by Correggio and by Guido Reni: Latin.

Edition de luxe—A luxurious and expensive edition of a book: French.

Eisen und Blut—Bismarck's famous phrase, meaning iron and blood: German.

El dorado—Golden land: Spanish.

Embonpoint—Stout or stoutness; literally, in good form: French.

Emeritus—Retired; generally applied to a professor: Latin.

En attendant—In the meantime: French.

En avant—Forward: French.

En déshabillé—In undress: French.

En évidence—Conspicuous: French.

En famille—In the family circle: French.

Enfant terrible—Literally, terrible child; used of a child who says indiscreet things that annoy or confuse his elders: French.

En fête—On holiday: French.

En masse—In a body: French.

En passant—In passing: French.

En route—On the road: French.

En suite—In succession; frequently misused by being made to mean "to match": French.

Entente cordiale—Good international understanding; particularly applied to British and French national friendship: French.

Entourage—Surroundings; followers: French.

En tout cas—In any case; also a sunshade: French.

Entre nous—Between ourselves: French.

Entrez—Come in: French.

Errare est humanum—To err is human: Latin.

Et alia—And other things; generally written *et al.*: Latin.

Et alii—And other persons; generally written *et al.*: Latin.

Et cetera—And so on; and other things; usually written *etc.*: Latin.

Et tu, Brute—And you, Brutus; Cæsar's exclamation when he saw his friend Brutus among his assassins: Latin.

Eureka—I have found it; discovered at last: Greek.

Ewigkeit—Eternity: German.

Ex cathedra—Literally, from the chair; judicially or officially: Latin.

Excelsior—Higher: Latin.

Exempli gratia—For example; frequently written *e.g.*: Latin.

Exeunt omnes—All go out: Latin.

Ex libris—From the books; usually followed by the name of a person in the possessive case: Latin.

Ex nihilo nihil fit—From nothing comes nothing: Latin.

Ex officio—Officially: Latin.

Ex parte—On one side; biased: Latin.

Extra muros—Beyond the walls: Latin.

Facile princeps—Easily first: Latin.

Facta non verba—Deeds, not words: Latin.

Factum est—It is done: Latin.

Fait accompli—An accomplished fact: French.

Far niente—Doing nothing: Italian.

Faux pas—A false step or mistake: French.

Felo de se—Suicide: Latin.

Femme de chambre—Lady's maid: French.

Fidei defensor—Defender of the Faith: Latin.

Foie gras—Fat liver; fat goose livers are made into *paté de foie gras*: French.

Fortiter, fideliter, feliciter—Firmly, faithfully, felicitously: Latin.

Fortiter in re, suaviter in modo—Forcibly in deed, gently in manner: Latin.

Fra—Brother; the title of a friar: Italian.

Front à front—Face to face: French.

Gamin—Street urchin; ragamuffin: French.

Garçon—Boy; waiter: French.

Gardez—Take care: French.

Gloria in excelsis—Glory to God in the highest: Latin.

Gloria Patri—Glory be to the Father: Latin.

Grâce à Dieu—Thanks to God: French.

Hic est—This is; generally written *h.e.*: Latin.

Hic et ubique—Here and everywhere: Latin.

Hic jacet—Here lies; frequently written *h.j.*: Latin.

Hic requiescat in pace—Here rests in peace; frequently written *h.r.i.p.*: Latin.

Hier spricht man Deutsch—German spoken here: German.

Hoc anno—In this year: Latin.

Hoc est—That is; generally written *h.e.*: Latin.

Hoch—Your health, in proposing a toast: German.

Homini est errare—To err is the lot of man: Latin.

Homme d'affaires—Man of business: French.

Homme de lettres—Man of letters: French.

Homme d'esprit—Man of wit: French.

Homme du monde—Man of fashion: French.

Honi soit qui mal y pense—Shame be to him who thinks ill of it—the motto of the Order of the Garter: French.

Horrible dictu—Horrible to relate: Latin.

Hors de combat—Out of the fight; disabled: French.

Hôtel de ville—Town or city hall: French.

Hôtel Dieu—God's house; hospital: French.

Humanum est errare—To err is human: Latin.

Ibidem—In the same place, or in the same case: Latin.

Ich dien—I serve; the motto of the Prince of Wales: German.

Ici on parle français—French spoken here: French.

Idem—The same: Latin.

Idem quod—The same as; frequently written *i.q.*: Latin.

Id est—That is; generally written *i.e.*: Latin.

glad to pay that sum, for the rubber was invaluable to them for removing false marks from their sketches. Charles Macintosh, a thoughtful Scotsman, was the first in that country to put rubber to the use which the Indians had made of it; he used it to give us the first waterproof coats, and called them macintoshes after himself. Then it was discovered that rubber, which could withstand the effects of water, could not be penetrated by gas, and that the majority of other liquids, in addition to water, could not make their way through it. So surgeons had it made up into tubes. But the great discovery was yet to come.

HOW A CLEVER INVENTOR MADE RUBBER HARD

In its natural state, rubber becomes solid under the influence of cold, and soft and sticky under the influence of heat. An American named Charles Goodyear, about whom you read elsewhere in the BOOK OF KNOWLEDGE, was the first to discover that all this could be altered by adding sulphur which has been melted by heat. The process is known as vulcanizing.

By vulcanizing we can convert pure rubber into a substance resembling ebony. The black discs of which the gramophone records are made are of vulcanite; so are the black mouth-pieces of tobacco-pipes, the trays which we use for the acids in photography, and a thousand other things which we use every day. But there is another form of vulcanized rubber, the soft, of which we can make almost anything—casing for cables, springs for motors and carriages, buffers for railway trains, doorsteps, springs, bouncing balls, and so forth.

For a period of at least ten years Goodyear worked at the task of perfecting his invention, and sadly did he suffer from the scoffers of the time. He conquered in the end, after bitter suffering and poverty, and by 1844 he was triumphant. At about the same time a man named Thomas Hancock was at work on the same idea in England, so that two different men, in quite different parts of the world, were both working at the same scheme at the same time.

HOW THE WORLD TO-DAY DEPENDS ON RUBBER

What has this newly-treated rubber been used for? We can only speak of a few of its uses, for to treat of all would require a separate book. But it is rubber which first made cycling possible. There had been cycles long before—hobby horses, bone-shakers and other dreadful things of the same style. The rubber tire gave the bicycle new form, new life and dignity for the first time. But, as those of us who are old enough to have ridden the old tall bicycles will remember, the first rubber tires were small and solid. How they jolted and jarred along the stony roads, carrying the rider home with teeth aching and wrists almost shattered! Motor-cars could never have run with tires of this sort, for the bumping over even the very

best of roads would simply have shattered the engines to pieces in a short time.

Happily, in the last quarter of the nineteenth century, J. B. Dunlop of Dublin thought out the grand idea of making an air-cushion for a bicycle tire. These air-cushions had already been in use for about forty years, but they had not been applied to a bicycle rim. The principle of the first Dunlop tire was the same as that which makes a

motor-car or bicycle ride so delightful to-day. The inner tube is made of comparatively soft, thin rubber. It is that which we blow up with air. The cover which fits over that is stout and hard, and simply protects the inner tube from injury. It is the tube filled with air beneath the cover which has worked the marvel. The wheels of the bicycle or car actually run on the compressed air in the pneumatic tube.

Rubber is used to make footwear and other waterproof clothing. What would our policemen, our firemen, our fishermen, and our soldiers do without this protection as they perform their duty often for hours amid the violence of the waters?

Mechanical goods, including hose, belting for machines and tires for trucks, are all made from rubber. In electrical appliances we can hardly do without it for insulating purposes. Our physicians and surgeons depend upon rubber for



The common indianrubber plant of our conservatories.

much of their apparatus. In a liquid or semi-liquid form it has many uses; when mixed with lime it makes good cement. If rubber and coal-tar and shellac are heated together, a very sticky glue is formed. In special kinds of varnishes it is one of the ingredients, and it improves the lubricating qualities of mineral oils.

A DAY IN THE TROPICAL FOREST COLLECTING RUBBER

Let us go with the collector on his daily round in a part of the great rubber forests of Brazil. Most of the camps are on the great Amazon itself, or on one of its many streams, because these are the great highways of Brazil. There are generally both full-blooded Indians and native Brazilians working in the camp, and in this case, it is divided into two parts. On one side live the Indians in palm-leaf huts with their families, on the other, the natives in long, thatched buildings, open all round, with scores of hammocks strung from posts and beams. From the dwellings trails lead off into the forests in all directions.

The *seringueiro*, as he is called, gets up at four in the morning, and lantern in hand (for it is dark until six), sets out with his hatchet for gashing the trees. Following a trail, he gashes each rubber tree hastily, fixing a little cup below each wound, visiting each one of his hundred or so of trees and returning by another path to his hut for his coffee.

Later in the morning he must make a second round, or the milk will harden in the cups. He takes this time a bucket, and tips the contents of each cup into it, carefully leaving the cups upside down on bits of stick at the foot of the tree. When he returns with his milk he has to harden it over a fire of oily nuts in his smoking-hut. This has to be done while it is perfectly fresh, or otherwise the finished rubber will contain small holes like a cheese, and the merchant will grade it as inferior quality. Some of the natives pour the milk over a paddle and revolve it in a column of smoke till a ball weighing several pounds is formed. Some of them use a kind of shallow spool, off which the rubber can be slipped when smoked, and then cut into flat slabs.

A collector often walks from six to ten miles a day, for distances between each of his trees may be long ones. He works from four in the morning until sun-down,

or more or less fourteen hours a day. But on an average he works only 160 days in the year for the milk does not run all the year, and besides, during the rainy season it is often impossible to stay in camp.

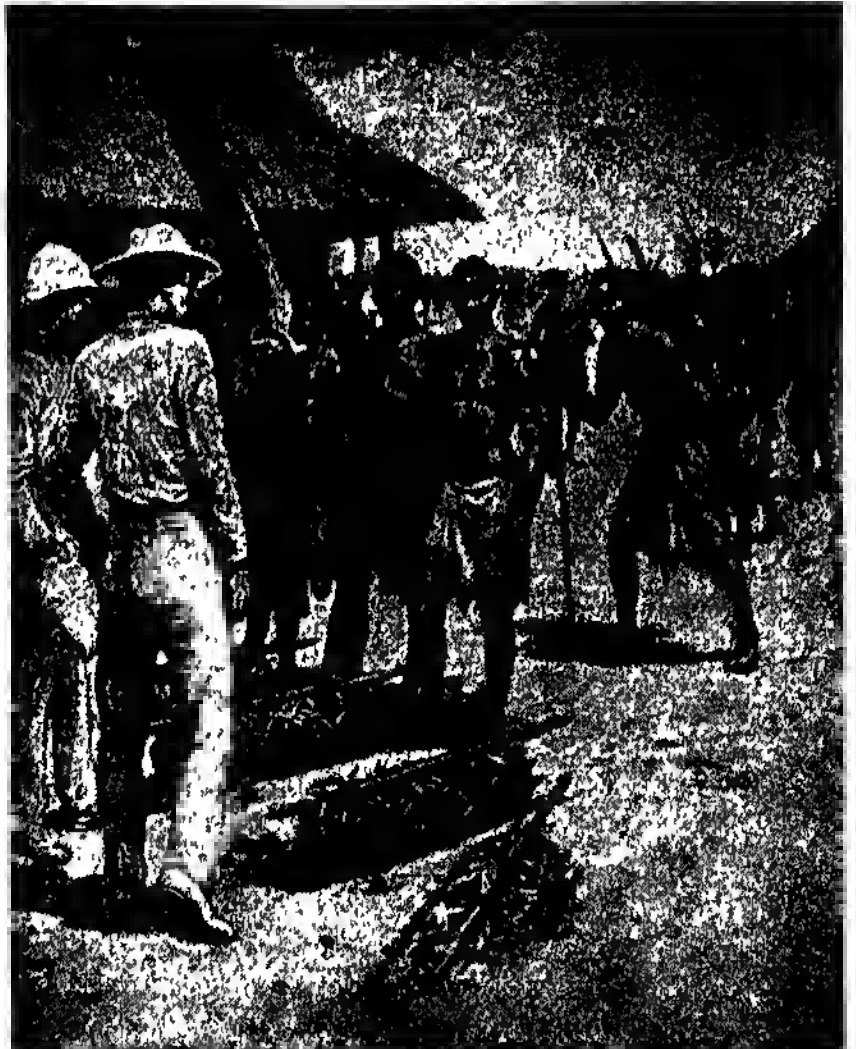
HOW THE WORLD'S SUPPLY OF RUBBER HAS BEEN ADDED TO

Although the best wild rubber comes from the trees on the banks of the Amazon in Brazil there are thick forests in other parts of South America, in Central America, and in Africa. In 1876 occurred an event which passed unnoticed at the time, but was to alter the fate of the Amazon Valley. An Englishman, Captain H. A. Wickham, went up the river and came back from his trip with cases full of rubber seed. It is said that he had 70,000 of these oval, mottled seeds. He took them to the famous Kew Gardens near London, and when after infinite care conditions were discovered under which the baby plant would live, a home was sought for them outside the chilly British Isles. It was decided that of all the dominions under the British flag Ceylon had a climate nearest to that of the Amazon, and it was in Ceylon that the first rubber tree flowered in 1881, the first time in history that a *hevea* had bloomed outside of Brazil. After patient care and long waiting the planted rubber came to yield not only in Ceylon, but in other parts of western Asia as well. In the last sixteen or seventeen years the export of plantation rubber has jumped from 4 tons to 140,000 tons—that is to say, that it is more than thirty thousand times as great as it was! Although plantation rubber comes into the market in a cleaner, better-looking condition, free from many of the impurities, such as earth, bark, leaves and wood, found in the wild rubber, yet the latter possesses greater strength and elasticity. Whether this is due to the presence in the balls and slabs of wild rubber of these foreign bodies which lend strength to the mass, or whether it is on account of the greater age of the trees in wild districts has not yet been determined. What is certain, though, is that the world will not outgrow its store of rubber, for not only is the plantation product yearly proving itself of greater and greater value, but inventors are busy over processes for making it artificially.

GATHERING RUBBER IN AN AFRICAN FOREST



Quantities of rubber come from the Congo Free State and other parts of tropical Africa, and here some natives are tapping the trees, while others are picking the fruit, from which to obtain seed for planting fresh groves of rubber trees. Much of the rubber that comes from Africa is obtained from climbing shrubs.



If the juice is allowed to stand for a time it becomes more or less solid, and the natives roll it into little balls. In this picture negroes are bringing the balls of rubber they have prepared to European traders for sale. Rubber, when first brought to Europe, was called elastic gum, and an inch cost over a dollar.



The balls of rubber have many impurities in them, and they are cleaned to some extent by being put in a sack and beaten, as shown in this picture. On proper rubber plantations, such as those in Ceylon and South America, the rubber is cleaned thoroughly by boiling.

The photographs on these pages are by Underwood & Underwood, and Suarez, Hermanos & Company. ✓



The rubber is next cut into slices, ready for drying before it is sent to market. There are various methods of drying. Sometimes it is laid out in the sun or left upon racks, while at other times it is dried by fires. Some of these processes are shown on page 5798.

PAYING THE RUBBER MEN THEIR WAGES



When the natives of Africa bring the rubber that they have gathered in the forests to European settlements, it is weighed, and payment is made according to the amount delivered. Here we see the weighing of the rubber.



The natives usually receive payment, not in money, but in such articles as hats, brass rods, and so on. This picture gives us some idea of the scene when the negroes are being paid for the rubber. Many of the African rubber forests have been ruined by careless gathering of the rubber, owing to the great demand. In the Congo the forcing of the natives to collect rubber has been accompanied by terrible cruelties on the part of the rulers.

PREPARING THE RUBBER FOR USE IN CEYLON



Every country has its own method of preparing rubber for use. The most scientific methods are used in South America. Here we see the inside of a rubber factory in Ceylon, where the material is being rolled out by natives after the juice has become solid. The basins standing on the right contain caoutchouc that is getting hard.

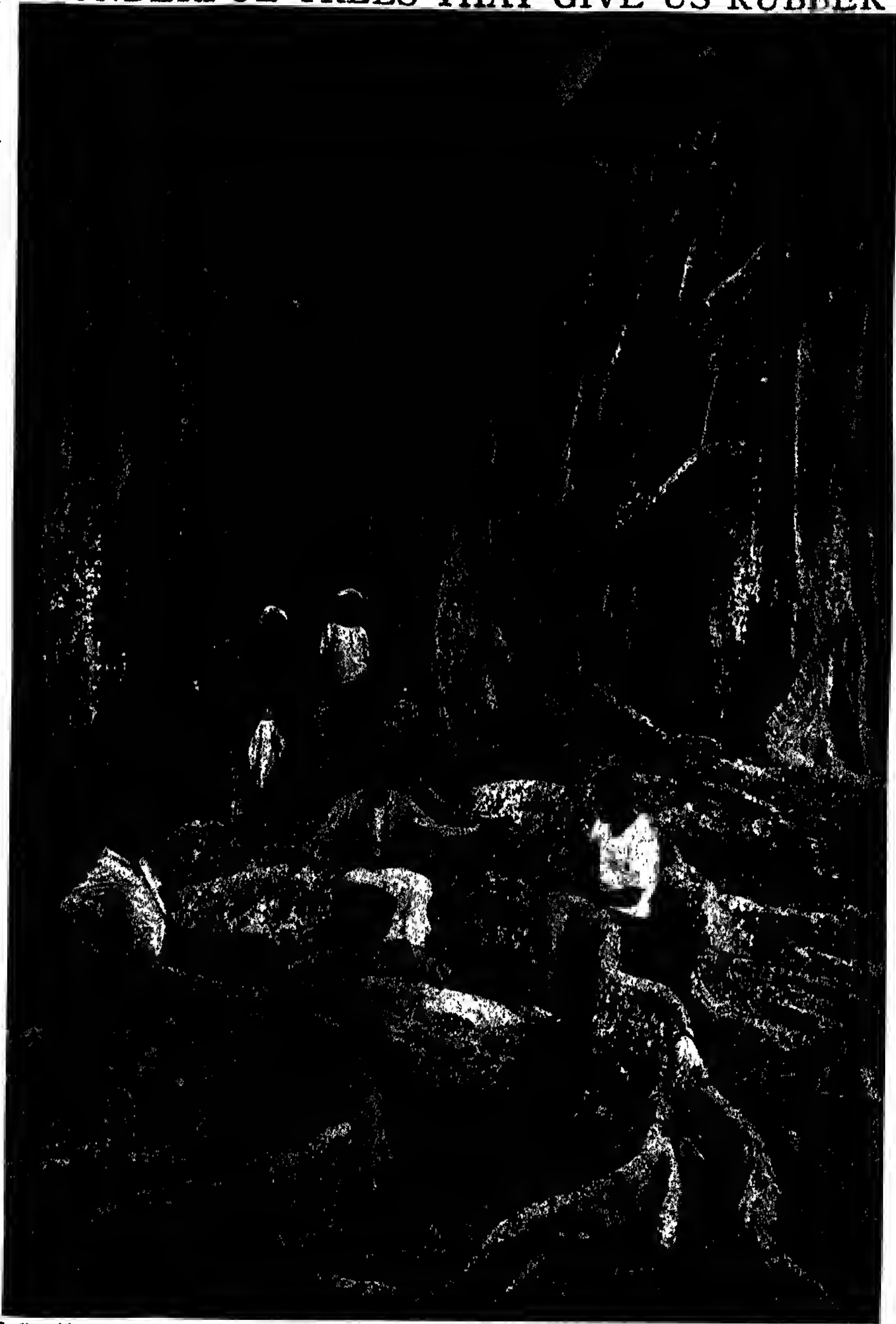


The picture on the left shows a drying-room in Ceylon, the rubber, which has been cut into strips, is allowed to hang up until it has dried in the ordinary natural way without artificial heat. On the right we see a corner of a drying-shed in Africa. The rubber is laid out on shelves until dry enough to take to European markets for sale.



In this picture a method of drying rubber by artificial heat which is used in Ceylon is shown. The rubber is placed in ovens, and is, of course, dried very quickly. After various processes, it is pressed into blocks and then cut into sheets or threads for use. Most of the rubber used to-day has sulphur mixed with it to make it more elastic and serviceable for use. This is called vulcanizing the rubber, and the discovery of the process has been of the greatest importance to the world, for without it rubber could be used for very few purposes indeed.

WONDERFUL TREES THAT GIVE US RUBBER



Indiarubber was regarded, a hundred years ago, as a curiosity for rubbing out pencil-marks. To-day the world barely gets enough for its many uses. This picture shows some of the great rubber trees in Ceylon.

THE NEXT FAMILIAR THINGS ARE ON PAGE 5857.
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THE GIANT OF THE FOREST IN A RAGE



An angry elephant is a terrible creature, and there is little hope for the traveler who gets in his way as he crashes through the forest, smashing down trees and by his great strength destroying everything in his path.

The Book of NATURE



A caravan in the forest attacked by fierce buffaloes.

WHEN MAN MEETS THE BEAST

WHAT happens when an unarmed man meets a lion? Man has conquered the world and mastered the beast, but still there are times, in these days of travel and exploration, when men come suddenly upon the paths of a wild beast. In some parts of the earth wild life still lives on the edge of civilization, and fierce animals, whose ancestors the early men fought, still stand in the path to challenge man if he dares to invade the forest and the plain.

Europe, in places, still teems with wolves; the tiger roams from India to Manchuria; the lion lords it over a great part of Africa; the leopard is feared and hated alike in Africa and India; America has the deadly jaguar and the puma or cougar; bears inhabit both the Old World and the New. A man unarmed in the wilderness to-day is as helpless against these savage creatures as his forefathers were. Firearms are our greatest protection.

India has a terrible death-roll every year as the result of the war of the tiger upon mankind. The natives are naturally timid, a fact that the tiger soon learns. Many tribes believe that a human soul is imprisoned in the body of the tiger, and this makes them more than ever unwilling to slay their deadly enemy. A belief

CONTINUED FROM 5753



of this sort is, as we all know, very old. A tiger does not attack human beings from the beginning of its career. Many a tiger goes through life without killing a man. Some take naturally to the crime, but generally there is some sort of cause for it. Perhaps the tiger, coming out in the evening when a native is driving cattle home, attempts to seize a cow or a calf. The native seeks to drive it away, and the tiger kills him at a blow. At once its fear of man is gone. It finds him the easiest of all creatures to kill, and from that time human beings are its prey.

Now, in Africa, when a lion takes to eating men, the more warlike tribes sally out in a great hunting party, and kill the enemy, though they may have to sacrifice several lives of men in the attempt. The native of India, however, is of different temperament. Unless some European comes along with a gun, he will tamely submit to the frightful work of the tiger, so that one tiger has been known to kill over a hundred people in one district.

Even with the best of firearms, man is often no match for the tiger, which is in many respects an enemy to man more to be feared than the lion. Though without such a fine armor of defence as the lion has in its shaggy mane and collar, the tiger has a more

powerful jaw, and even a more terrible grip than the king of beasts; and the horror of an encounter with a tiger is heightened by the swiftness with which the creature acts.

The suddenness of a tiger's attack is, however, trying to the nerves of the bravest man. Sir Edward Bradford, who lived to tell the story of his adventure and afterward to command the police of London, had a horrifying experience of the speed with which a tiger, from being hunted, becomes the hunter. A tiger which he had been stalking was wounded, and crept along the dry bed of a river. Sir Edward sought to get down to the same level, but lost sight of the animal as it went round a rock. The tiger had, however, climbed up an unseen cattle-track, and, on reaching his level, charged furiously at Sir Edward, who tried to shoot the animal dead. Then a most unhappy thing occurred: a twig from an overhanging tree caught the trigger, and prevented the gun from going off.

A MAN IN A TIGER'S GRIP

The tiger seized Sir Edward by the left arm, and pulled him down and lay on him. The brave man had nerve enough to lie perfectly still, in order that one of his men, armed with a gun, might approach and fire, killing the brute as it lay upon him. Sir Edward lost his left arm below the elbow, but he was so keenly anxious to save his life at all costs that he did not feel the least twinge of pain. The mind in such a moment is so active in inventing ways of escape that it rises superior to physical suffering. It may not be so in every case, of course, but we know from many instances that this merciful provision of nature is not unusual.

This same merciful unconsciousness of pain was experienced by Livingstone, who had one of his arms badly bitten by a lion, yet felt no pain at the time. His brain was working so hard at a plan of escape that there was no room for thought of pain. Experiences like these and close observation of battles between animals have made careful thinkers believe that nature is not so cruel as some people have thought, and that in all probability animals killed by other animals do not suffer in their death conflict, but lose their lives in a painless struggle.

THE MAN WHO TOLD A LION TO STOP

But, whatever the facts may be, the terror of a conflict with a wild animal is hideous enough to make us pity the man who must endure it. A lion met by daylight is never so terrible as if encountered at night. A man of good nerve may get the better of lions when the sun is up, without firing a shot. Lord Randolph Churchill rode into a troop of seven lions, but they did not attack him. Another man was charged by a lioness which had been injured, and was, therefore, doubly savage. He had not time to reload his gun, but he stood still and faced the charging beast. He cried in a loud voice to her, "Halloa, there, steady, steady!" The lioness slackened her pace, puzzled, and a little alarmed. She was not used to the human voice, particularly a voice used in a tone of command. She came on again, however, and this time the man flung his arms above his head, and shouted still louder and still more firmly. This completely upset the lioness's nerve, and, instead of springing on the man, she stopped, and allowed him slowly to retreat, when she turned tail and disappeared.

There is another story of the way in which a hunter met a troop of lions when his gun was empty. The only thing handy was his telescope, and he flung this with all his might at the lions, yelling at the same time at the top of his voice. A cat will flee from the garden if we pretend to throw a stone at him, and these big cats in the African wilds were no more courageous. At the sight of the flying telescope they fled. To see a man throw a thing is probably to an animal like some terrible magic.

A MAN WHO WAS TAKEN IN HIS SLEEP

But men do not often escape so lightly as this. A lion once jumped into an encampment, and seized a sleeping man. His cries aroused other men, and the lion was beaten off; but two or three hours later the lion crept silently back to the tent, and carried the man off, his comrades being unable to rescue him. The poor man was an English official who had been journeying to Uganda, where the lion has played sad havoc with human life.

Great Britain spent six years in build-

TRAVELERS IN THE WIDE WIDE WORLD



A POLAR BEAR DEFENDING ITS YOUNG AGAINST ARMED TRAVELERS IN GREENLAND



THE TERRIBLE SPRING OF THE LION UPON ITS PREY

IN THE PATH OF THE RHINOCEROS



THE END OF A BLACK RHINOCEROS, WHICH CAN GALLOP LIKE A HORSE



THE GREAT WHITE RHINOCEROS CHARGING A PARTY OF TRAVELERS

THE TERROR OF AN AFRICAN RIVER



THE HIPPOPOTAMUS, WHICH LIVES IN THE RIVERS OF AFRICA, ATTACKING A BOAT



A GREAT BULL ELEPHANT HELD AT BAY IN AN AFRICAN RIVER

ing a railway through Uganda. The railway begins at Mombasa, on the coast, and ends 584 miles inland, at the great lake Victoria Nyanza. It runs through the heart of the wilds, where lions and leopards and other ferocious animals abound. It was a strange picture, the coming of this railway into this dark, mysterious land, where the conditions of life had scarcely changed since the dawn of creation.

The lions had no respect for the works of man; they preyed so terribly upon the men who were building the railway that at one time the whole series of operations had to be stopped. The British Empire was, for the time being, defeated by lions, who killed so many men as to cause panic in the camp, though the men could not justly be called cowards.

THE MOVING SHADOW ON THE RAILWAY

The lions advanced, roaring, upon the camp at night; then a great silence would follow, showing that the beasts were seeking a way in. In a few moments a terrible cry from the camp would tell that they had found a way, and everybody knew that there would be a man missing from the roll-call in the morning. In nine months the lions killed twenty-eight men working on the railway, as well as a large number of natives who acted as camp-followers. It is supposed that this destruction was wrought by two lions only, and it is satisfactory to know that these creatures were killed by a brave officer named Lieutenant-Colonel Patterson, who was an engineer engaged in building the line. Mr. Patterson has written a book on these and other African adventures.

THE ELEPHANT CAST OUT BY HIS COMPANIONS

It is always painful to hear of the wanton destruction of elephants, which, when tamed, are such faithful and intelligent servants of man. But there are pleasant elephants and unpleasant elephants. There is no more terrible animal in the world than the rogue elephant. This is an elephant which, for some reason or other, has become separated from the rest of a herd, and is not permitted by the others to rejoin. He becomes an animal outlaw. In his rage and disappointment the elephant will kill human beings out of sheer

wickedness, rushing at them, knocking them down, and killing them either with its tusks, or pounding them flat with its great feet. A hunt was organized after an Indian species of this sort which, in the course of four years, had surprised and killed nearly fifty natives. It was a monstrous animal, and though pursued by thirty men riding on elephants, the animal charged again and again, and was not killed until eighty shots had pierced its body.

THE DREADED LEOPARD

Although the leopard is smaller than the lion or the tiger, it is really more feared than either. It will attack human beings more readily than either of its two larger cousins, and it is more terrible from the fact that it is a great tree-climber, which the lion and tiger are not. Where a monkey can go a leopard can follow, and from the branch of a great tree, where it lies so close as to be unsuspected, it springs down upon man or animal, ready to use its powerful jaws and claws with terrible effect. As a rule, leopards do not eat human beings—they are content to kill them; but once they begin this frightful pursuit, they are as much to be dreaded in Asia and Africa as the worst of man-eating tigers and lions. Not long ago two friends were sitting with a dog in an East African farmhouse at night, when a monster leopard sprang through the open window. Dazzled by the light in the room, it tried to make its way through the doorway, but managed, unfortunately, to shut the door instead. Then the leopard turned upon the farmer, and, knocking from his hand a chair which he had picked up, dealt him a blow on the scalp.

The poor man had no firearms ready, and could only fight with his fists. This had little effect, but the farmer's dog rushed to his assistance, and boldly attacked the leopard, driving it towards the door, which the farmer had now managed to open. Feeling a draught of cold air rush in, the leopard sprang for the opening, and bolted out of the room, with the dog still hanging to its leg.

JAGUARS AND PUMAS

The jaguar and the puma are to America what leopards are to Asia and Africa. The jaguar is merciless to

A TERRIBLE MEETING WITH A BUFFALO



The South African buffalo with his sharp, hooked horns is one of the most terrible animals that man can meet. * He is so fierce that he will charge a lion, and has even been known to conquer the king of beasts.

human beings, killing where it does not need food. A jaguar strolled into a South American town one evening and walked into an open church. Presently a priest made his way in, and was immediately killed. A second priest went to seek him, and he, too, was killed. A third priest followed, but he, by rushing from pillar to pillar, managed to avoid the spring of the jaguar, and made his way to the door. Banging it behind him, he escaped, and gave the alarm. Part of the roof of the church was removed, and through the opening men were able to shoot the cruel beast within.

In his book of travels in South America, Colonel Theodore Roosevelt retells a story which was told him by a man who was almost killed by a cougar. Early one morning, Dr. Moreno set out alone to make a sketch of a lake by which he had camped. He foolishly left his gun behind, and had not even a knife for defence, but luckily carried a compass in a leather case. He had not left his camp very far behind when, without warning, a cougar sprang on him from the bushes. Her weight and the shock brought him to the ground, and as he fell, she tried to seize his head with her claws. Happily, however, the morning was cold. He had wrapped a poncho of guanaco hide round his head and shoulders, and she failed to gain a hold on the leather. This saved his life. As man and beast rolled over in the struggle, the man freed himself for a moment and regained his feet. Quick as lightning, he snatched off his poncho, and opened it as a shield, and as the cougar sprang again, he swung his compass by its strap, and struck her on the head. This caused her to miss her aim. Her claws slipped on the poncho, and much puzzled she slunk off to try to get around him. He was too quick for her, however, and though she tried to attack him three or four times, and his face and shoulder were torn and bleeding, he succeeded in reaching the camp.

Though the jaguar was once common in North America it has become very rare. The puma or cougar is, however, found plentifully on both continents. This animal, often called the "mountain lion," is cowardly, but it can and will fight when cornered. Its cry is one of the most terrifying sounds the hunter hears.

These great cats are the worst animal

foes of ranchmen on the American continents, for they cause terrible destruction among horses and cattle. Long, long ago, South America had native horses, but when the first Europeans landed in the country there was not a horse to be seen in the land.

It is now thought that the jaguar and puma were responsible for the destruction of the early American horses. Horses were wild in those days, and so did not have the protection of men.

A MAN'S FIGHT WITH A CROCODILE IN AN AFRICAN RIVER

In the water the animal most feared by man is the shark, but there is a freshwater creature much more terrible than the shark, and that is the crocodile, which, when its victim struggles, swoops down upon him with a rush, and seizes him with its frightful jaws. It is not often that an unarmed man escapes from such an encounter, but one scarred native of Northern Nigeria lives to boast of a victory over a crocodile. He was an Englishman's servant, and one night fell overboard from a boat into the river.

There was a frantic struggle. The crocodile was hungry and fierce, but the native saved himself by remembering an old lesson. He groped for the eyes of the crocodile, and managed to thrust his thumbs into them. The crocodile instantly let go, and the man then dragged himself ashore. He was found in the morning, and taken to a hospital. After he was cured the brave man traveled in search of his master, found him, and re-entered his service. He took with him a precious trophy, six teeth of the crocodile, which had broken off in the struggle, and become fixed in his scalp.

WHAT HAPPENED TO THE EARLY MEN

Struggles of this kind still happen from time to time in various parts of the world which civilization has not yet conquered. They give us an idea of what must have happened in the days when the first men fought with beasts for a place upon the earth. The nature of wild beasts has not changed, nor has their strength weakened. Man is lord of earth only by the power of his brain, which has enabled him to make weapons more deadly than the brute force with which he is still compelled at times to do battle.

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HOW THE MINER GOT HIS LAMP

ONE of the most important journeys ever made by man was undertaken on January 9, 1816, by John Hodgson, the rector of a parish near Newcastle, in England. It was he who first carried a safety lamp into a coal-mine.

Before that day many miners had worked in the darkness of the pits with only a revolving disk of steel spluttering sparks from a flint at the edge. The black air of some mines is filled with gas, which will flame at the touch of a light, and burst with a terrible explosion. Therefore the miners worked with only the sparks of the steel disk to give them the smallest sense of light.

It chanced one day that Sir Humphry Davy, a famous man of science, of whom we read in *The Story of Men and Women*, was staying with friends in Northumberland. Some people there, including Mr. Hodgson, asked him if he could not invent something to prevent mine explosions. They described the horrors of fire-damp, as the worst of the mine gases is called, and told of the awful explosions which are like lightning and earthquake combined. Sir Humphry thought over

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the matter, and began to make experiments.

He discovered a wonderful thing—*flame will not pass through minute tubes*. He put on his thinking-cap—if it was ever off his head!—and came to the conclusion that wire gauze is only a series of little tubes placed side by side. He constructed a cylinder of this wire gauze, and put a flame inside. Light came through the holes, but not flame. And yet, how absurd! Cannot the gas come through those holes and touch the dangerous flame? Yes, indeed; but it cannot get out again *as flame*. That was the discovery.

He sent to Mr. Hodgson for "a bottle of fire-damp" out of the mines, and tried it on his wire-gauze invention. No explosion took place. He then gave orders for a rough safety-lamp to be made.

This was the lamp that Mr. Hodgson bravely carried into Hebburn Pit on January 9, 1816.

On went the clergyman with his flaming lamp, more wonderful than Aladdin's, penetrating farther and farther into the mine. In the distance a lonely miner was swinging his pick by the dim light of a steel-

mill. "Put out that light!" he shouted, in tones of horror.

That was the miner's welcome of the Davy lamp. Put out that light!

To the poor fellow's utter amazement, the lamp advanced. With terrible oaths he called out that the madman, the fool, the monster carrying it should stop! Still the lamp advanced. Oaths and curses turned to agonized entreaties; the miner cried out with all his soul that the lamp should be put out.

Then his prayers ceased. The mystery of this advancing light, passing so quietly and so safely through the mine, was like something from another world. In breathless silence he waited, as, without a word, the man who held the lamp came solemnly, steadily on. At last he was close to the miner.

The lamp illuminated the face of someone he knew—John Hodgson, the clergyman, the friend of many a poor miner in that black country. The miner could hardly speak. He saw this man holding up in the pit a lamp that shone in the midst of danger, and yet there was no explosion; and he readily forgave the clergyman for frightening him. When Sir Humphry learned of this triumphant success, he was elated. A friend urged him to take out a patent. "It will bring you in £10,000 a year," said he. But Davy would have none of this. He did not want to receive money for saving life.

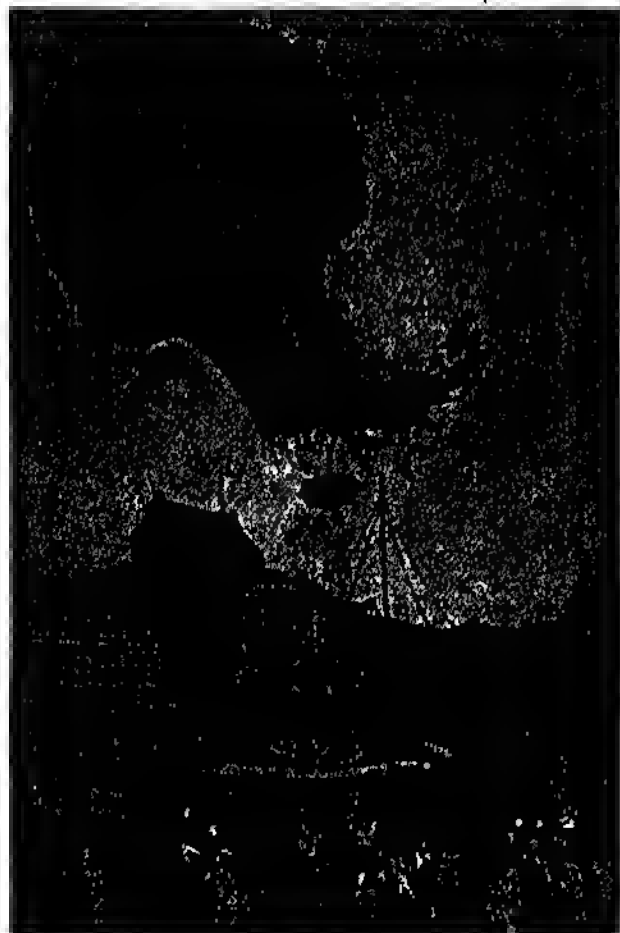
WHO FIRST ATTEMPTED TO MAKE A FLYING MACHINE?

We do not know who first tried to fly. There is a tradition that an English monk made an attempt in Spain even before the time of the Norman Conquest. Bacon the friar philosopher, and a Saxon bishop who lived a hundred years later than Roger Bacon, both had ideas that with a better knowledge of science might have led to the invention of a balloon, and Leonardi da Vinci the great artist made plans for some sort of a flying machine. It was not, however, until the seventeenth century that a real attempt to travel through the air was made.

A sheep, a cock, and a duck were the first creatures to ascend from the earth in a flying machine. Before man dared venture into the unknown region of the upper air, he sent these three creatures before him, just as Noah loosed the dove from the ark.

The sheep, the cock, and the duck were

sent up in a balloon on June 5, 1783, by two young Frenchmen named Montgolfier, the sons of a paper manufacturer.



A BALLOON ASCENT WITH ANIMALS

The balloon rose from Paris, reached a height of 1,500 feet, and then fell gradually through the air till it reached the earth.

In the same year, on November 21, man himself made his first voyage of the air. Pilâtre de Rozier, a young naturalist, and the Marquis d'Arlandes, a major of infantry, were the first human beings to fly in the upper air. They ascended in a free balloon at two o'clock in the afternoon, before a concourse of people. As the strange contrivance rose with a steady and majestic pace, "wonder, mingled with anxiety, was depicted in every countenance; but when from their lofty station in the sky the navigators calmly waved their hats and saluted the spectators, a shout of delight burst forth on all sides." This first flight by man is said to have been 3,000 feet. The two aeronauts remained twenty-five minutes above the earth.

In the same year came a balloon filled with hydrogen, the invention of a Frenchman named Charles. Early in 1785 the first crossing of the English Channel was made by a Frenchman named Blanchard and an American named Jeffries. Another Frenchman named Tetsu has left us an interesting account of an ascent in June 1786, when he rose to a height of 3,000 feet, and sailed over the country. De-

scending to a field for stones as ballast, the car was seized by a farmer and peasants and dragged towards the village. But M. Tetsu suddenly cut the cord held by these peasants, and up shot the balloon. In his ascent he encountered a terrible storm. "The lightnings flashed on all sides, the cloud-claps were incessant, and snow and sleet fell all around him. In this most tremendous situation the intrepid adventurer remained the space of three hours." He passed the night with the stars, saw the sun rise, and descended sixty-three miles from Paris.

WHAT DOES AFFORESTATION MEAN?

This is a long word, but, after all, it is only made from the word forest, which we know very well, and it means making forests. There are many trees growing which no man planted, but since men in the past and to-day cut down many trees for the sake of their wood, or because they want the land for some other purpose, it is very important that new trees should be planted. It would be a very good rule for the future that two saplings should be planted for every tree cut down.

The civilized nations, including ourselves, have been very careless about this in the past, and if we went on as we have been doing, there would soon be a timber famine, especially as the demand for paper made from wood is increasing every year. But no individual man can make money by planting trees, for they take a long time to grow. Therefore, afforestation is a work which the nation should undertake. That is already being done very much in Germany, where many thousands of men are always employed upon the State forests, caring for them and extending them. In France also great care is taken to maintain the forests. This is one of the things which we are beginning to do in this country and also in Canada.

WHY DO WE THINK WE HAVE SEEN SOMETHING BEFORE, WHEN WE HAVE NOT?

This is a strange thing about the mind which has often been commented on, and various explanations have been given. As usually happens, when anything has to be explained, different people tend to give the explanations which best agree with what they themselves believe on other matters. Now, there are people

who believe that each of us have lived many lives before. They suppose that when we die our souls pass into new bodies, and that so we go on from age to age. Such people will answer our question by saying that, though we have never seen the thing before in our present lives, yet we have seen it in some previous state of existence, and the soul remembers.

A much better explanation, which may or may not be correct, depends upon the fact that the brain is made of two halves which are very like each other. Indeed, it is not at all far from the truth to say that, in a way, each of us has two brains. These two parts of our brain, right and left, are connected by a vast number of nerves which run across from side to side between them.

It is quite likely that the two halves of the brain do not always work exactly in step, so to speak. Probably they do so as a rule, but sometimes one may lag a little behind the other. In such a case we might imagine that when the lagging half of the brain saw for itself what had already been seen by the quicker half, the mind, as a whole, might become confused, and wonder whether it had not found itself in the same place before. This explanation must not be accepted as true, because it is only a guess, but it may be a guess that has, at any rate, a basis of truth.

WHEN WE DREAM WE ARE FALLING SHOULD WE FALL IF WE WERE NOT IN BED?

This is not an easy question to answer. We can scarcely have bad dreams unless we are asleep, and as we cannot stand if we are asleep, there would be no farther to fall in any case, whether or not we were in bed. Yet all these questions about dreams and nightmares deserve close study.

So far as we yet understand a case like this, the waking is due to the start, and the start is due to some order that has suddenly been given to the muscles. The sudden muscular twitch wakes us in its own very unpleasant way. The order was sent to the muscles in an attempt to right the balance of the body, which the mistaken brain thought to be in danger.

So far so good, but now, why did the brain have the notion that we were falling when, in point of fact, we were lying safely in bed? The answer seems to be that our idea of the position of our bodies

largely depends upon messages sent up to the brain from the inside of the body, and not least from the neighbourhood of the stomach. But, when the stomach is out of order, wrong and misleading and unpleasant messages are sent, which the brain, when the judgment is asleep, interprets as meaning that we are falling. The moral is that people who have such nightmares should be very careful about what they eat immediately before going to bed.

CAN A DOG REASON?

The boy who asks this question has doubtless, when passing along the street some day, had his attention arrested by seeing a dog stand at a street corner as if considering which way to go, and then go up one street and suddenly turn back and go up another, and he wonders if this means that the dog is "making up its mind."

Well, there is some evidence which proves to us that dogs can reason up to a certain point, and we are bound to call them intelligent, and more than instinctive animals. But the case referred to when this question was asked by no means proves that dogs are able to reason.

In order to explain such a case as this we must remember that dogs possess one very important sense, the sense of smell, which is so feeble in ourselves that we can scarcely realize the part it plays in a dog's life. When the dog goes a little way up one street, after seeming to consider, and then turns back, it does look as if he had been reasoning and had decided that, after all, the other street was best. We can see no reason why he should change his mind. But the truth is that we can *smell* no reason why he should change his mind, and so it looks as if he had been guided not by anything outside, but by his own arguments.

The dog's world is mainly a smell world. What happened in this case was that the dog's brain, at the parting of the ways, was uncertain as to the direction of a scent the dog liked, or as to the nicer of two scents, and when the dog turned back it probably was because, on further smelling, the scent up the street he had chosen disappointed him. We live mainly in a seeing world, and our deeds must often be just as puzzling to a dog as his deeds are to us.

WHAT MAKES THE HALO ROUND THE MOON?

When we look at the moon and see what appears to be a beautiful halo all round it, we are naturally prone to suppose that the halo is really round the moon. But that is very far from the case. The halo is really nowhere near the moon at all. If it were, no doubt we should expect to see it round the moon always, but instead of that we see it only at times, and in certain states of our air. Also we notice that certain kinds of weather are apt to go with halos round the moon, a fact which plainly shows that the halos are made by something in our air, which is practically as far from the moon as we are ourselves.

There must be something in our air which bends the rays of light in a regular way, so as to form a circle, sometimes larger and sometimes smaller, round the image of the moon that we see. This is done by water in one form or another, sometimes, it is supposed, by raindrops, sometimes by frozen water existing in the form of ice-crystals.

WHY DO FLOWERS DIE SO SOON?

We are prone to think of flowers as the whole plant, but that is a mistake. The flower is the most beautiful part of a plant, and the part easiest to see; but it is only part of the plant, made for the special purpose of producing seeds from which new plants will grow. The process of preparing seeds has been going on long before the flower opens; then, when it does open, it gives the signal, by its beauty or its scent.

Insects promptly visit it, and by carrying to the flower some yellow pollen, which they have got from another flower of the same kind, they make the seed quite ready to grow into a new plant. When this is done, the petals of the flower, which are the beautiful part we see, have no more use; they drop off, and we say that the flower is dead. But this is not death; it is part of the processes of the life of the plant that are going on from generation to generation.

DOES THE SUN KEEP STILL?

No. We have perfect proof that the sun moves in two different kinds of ways at least, if not more. For one thing, the sun spins upon itself. This we know because we can watch sunspots appearing

on one side of the sun, traveling across its face, disappearing, and then coming back again after an interval of days.

The sun spins in the same direction as the earth spins, and in the same direction as that in which the earth revolves round the sun. Secondly—and this is far more astonishing and tremendous—we can prove by watching the positions of the stars that the sun is moving through space, and all his family, of course, including ourselves, must be moving with him.

There is a glorious bright star, Vega, one of the whitest and most splendid stars in the sky, which is said to represent about the point toward which the sun and his family are at present moving. The rate of that movement is believed to be about twelve miles a second.

IS IT POSSIBLE THAT MONKEYS WILL EVER BECOME MEN?

There is no great future for the race of monkeys, simply because they are so far behind to-day that they have lost the race for ever. Thousands and thousands of years have passed since man became master of the world once and for all. All other creatures are more and more coming under his will, wisely or unwisely. There are four kinds of monkeys that form a special group of their own, and are called man-like.

Two of these exist in the Congo forest, and will probably soon become extinct; the other two live in Malaysia, and their fate, though probably not quite so near at hand, will doubtless be the same.

CAN INSECTS COMMUNICATE WITH EACH OTHER?

Insects are, perhaps, the most wonderful talkers in the animal world. They make us realize that communication does not depend upon tongue and lips and voice alone. They talk with their feelers, or antennæ, as they are called. There is no doubt about it.

If the bees in a hive lose their queen, they do not all immediately discover it. The saddening fact becomes known at first only to a few. But these meet others, whose antennæ they touch with their own, and so tell the direful story. These communicate the news to others, and so the news is spread. Soon the hive is in an uproar.

Very much the same sort of language must be employed by the ants. All their words are spoken by means of their

feelers. No one who has watched them at work can doubt that the wonderful cities of the bees and ants are regulated by strict discipline.

To see whether the habits of ants of communicating news was to be observed when they were in a state of captivity, Huber, the great naturalist, placed a large number of them in a closed and darkened chamber. At first the ants scattered in much disorder. By-and-by an ant discovered a way out of the darkened chamber. He returned to his companions and touched several of them with his antennæ. Soon all the ants assembled in lines, and marched out with one impulse, the desire for liberty being thus communicated.

DO BIRDS TALK TO ONE ANOTHER?

There can be little doubt that birds have an extensive language, but not all of it that we hear is important; some birds chatter for the love of hearing themselves, and we are all glad that they do. But they have their important talks, and we know positively that it is serious language which they use. Men who devote the greater part of their leisure to the study of birds and their calls can deceive birds by imitating those calls. Men find out that certain calls are followed by certain results, so, hiding themselves on the shore or in the fens, they utter these cries, and birds, wild and nervous as only wild birds can be, will drop from the clouds to answer the call, which they imagine to be made by some bird of their own species. Fowls afford a good opportunity of studying bird language.

We may note the language of the hen when she has laid an egg; when she warns her chickens of danger; when she calls them to rest under her wings; when she calls them to food.

DO ANTS CATCH SLAVES AS MEN USED TO DO?

There is not the slightest doubt that ants do catch slaves, and that they hunt for slaves in parties.

When the slave-making ants desire to plunder some prosperous home of the ants called *Formica fusca*, they do not all wander off, aimlessly searching. No; for weeks they have properly organized parties of scouts and spies going out every day, searching the country far and near. These scouts return at night

and present their reports ; for the general mass of the ants never go out until the spies bring news of nests to be plundered.

When such a nest has been discovered, the slave-hunters sally forth in a body to rob it. Generally the march to the nest is well ordered, but in the rush for plunder some confusion may arise.

Then groups of the party of slave-hunters will lose their way. As soon as this happens, scouts will be sent out by the lost ones. The whole party of the latter will remain perfectly still until the scouts have scented out the trail. These scouts return to their friends, and tell them the news. Then they set forth again on the trail, and march on to the nest to join in stealing the infants of the nests, whose home is thus broken up.

IF WE CAN LIFT THINGS, ARE WE STRONGER THAN THE PULL OF THE EARTH?

If we can lift a thing, certainly we are stronger than the pull of the earth *for that thing*; and when we cannot lift a thing, it is because we are less strong than the pull of the earth for that thing.

The force of gravitation depends in an absolutely regular way upon the amount of matter in question. A small stone is pulled upon by the earth to a certain extent with a certain force, which is not very great, though the earth is large. For though the earth is large the stone is small, and the force of gravitation depends upon the size of the two things in question. But if the stone be a great rock, then the force of gravitation is proportionately greater, and we cannot lift it.

WHY DOES A KITE KEEP STILL AT A GREAT HEIGHT?

As you read this you may be looking out across a sea-bay. Here and there along the coast you may see the water being disturbed in small patches by the gusts of wind blowing off the shore.

Farther out to sea the water is all in the same state, not patchy. This means that the wind near the shore is blowing in little bits at a time, and if you were in a small boat you would feel it quite strong at one moment and not at all a few yards farther on. If you were flying a kite close to the ground, it would dive unsteadily in these small gusts, but far out at sea it would fly quite steadily. So it would if it got high up in the air.

The reason is that the surface of the ground is very uneven, broken up by

hills and valleys and trees and houses and bays and promontories, round all of which the gusts blow at intervals. This is why boating is dangerous on lakes, and in similar places; and the same thing accounts for some of the accidents which happen to airships.

WHAT IS THE SMALLEST DISTANCE WE CAN MEASURE?

The ordinary way of measuring any distance is by what we may call mechanical means—the same in principle, though vastly more delicate, as measuring by means of a footrule. The best possible that can be attained in this way is to measure to about one twenty-five thousandth part of an inch. This particular distance is much used in science, and has the Greek name of a “mikron.” It is the thousandth part of a millimetre in the metric system.

But it is now possible to measure distances in a wholly different way by means of light. Light consists of waves of known lengths, and this fact can be used for the measurement of very minute distances. In its delicacy this method far surpasses anything that can be approached by mechanical means, and the unit of distance which can be measured by means of ordinary red light is actually not more than one eight-millionth part of an inch.

WHY IS IT IMPOSSIBLE TO SINK IN THE DEAD SEA?

We can sink only in water which is less dense than our bodies. Fresh water is less dense than sea-water, and that is why it is easier to float in sea-water. The water of the Dead Sea and of the Great Salt Lake in Utah, contain so much salt that it is denser than our bodies, and so they will not sink in them. People who visit them often bathe in them as an experiment.

One writer says that a bath in the Dead Sea is “both pleasant and refreshing”; but Sir Francis Galton, the famous traveler and man of science, actually made the experiment himself, and this is what he says: “I tasted and foolishly bathed in the nasty, sticky, dense water of the bituminous Dead Sea, which stuck in my hair for the day.”

There seem to be three reasons which account for the extreme saltiness of the Dead Sea, which has actually more than one part of salt to three of water. The

first is that much of the water which runs into the lake has run over the salt range of Sodom, and thus carries in large quantities of salt. Then there is a large number of salt springs which run into the Dead Sea at various points along its shores. And, lastly, there is evaporation of the water of the Dead Sea, which flies away into the air, leaving behind the salt which it brought in.

WHY CANNOT FISH LIVE IN THE DEAD SEA?

The Dead Sea was first so named by the great writer, Jerome, because no form of animal life is found in it. This can readily be explained when we study the composition of the water. It would, in the first place, be difficult or impossible for a fish to keep under water—which is as necessary for it as it is for us to keep above water—in the Dead Sea, so dense is the water owing to the salt. And, in the second place, the salts found in the water include some which are powerfully antiseptic, or fatal to life, particularly the lower forms. There is actually in it three per cent. of the salt called calcium chloride, which is very poisonous to all forms of life. More than half the salt of the Dead Sea consists of magnesium chloride, and its composition is thus very different indeed from that of ordinary sea-water.

ARE THE STRONGEST NATIONS THE HAPPIEST?

One is always inclined to believe that the nation is best off which has the greatest army and navy and the greatest material power.

But it is by no means so certain that the citizens of Switzerland and Holland and Sweden are less happy and to be envied than those of the "Great Powers," as they are called. When we come to look at the facts fairly, we find that a little nation may be just as prosperous as a big one, its citizens less burdened, its children better cared for, its laws more just and humane and progressive.

It is among the Great Powers, like Russia and Austria and England, that we find a very high death-rate among babies, and it is in small countries, like Norway and Sweden and Switzerland, that we find the figure lowest. We also find that the amount of trade done by the small and weak nations is often higher, when reckoned for each person, than that done by the strong nations.

WHY SHOULD WE HAVE STATE FLOWERS OR NATIONAL FLOWERS?

There is no reason why we should have a state flower or a national flower unless it means something to us, but it usually means a great deal. You remember in Hamlet, Shakespeare makes poor Ophelia say, "There's rosemary, that's for remembrance." All flowers are for remembrance, and we want national flowers to help us to remember.

The flag is a high and holy symbol. It teaches us to remember the might and majesty and the honor of the nation; its loyalty to justice and truth, and the purity of its great ideals. But after all, just as every nation is made up of individuals and families, for each one of us, our country centres round his home. The flower that grows beside the doorstep, by the spring, down in the orchard, or in the field beyond the wood, speaks to us of that home. When you grow older you will realize how a flower, or even a whiff of its odor as you pass it by, brings back to you some scene of your childhood days; perhaps to some flower-scented day in summer when you proudly stood up, saluted the flag and vowed allegiance, which meant of course that you would do nothing in all your life that would bring dishonor on your country's name.

So we say flowers are for remembrance, and the state or national flower is to keep us in remembrance of our homes and our country. The United States has not yet adopted a flower, but most of the states in the Union have done so, and that you may know what the state flowers are, we give you a list of all:

Alabama	No choice
Arizona	Giant Cactus
Arkansas	Apple Blossom
California	Golden Poppy
Colorado	Blue Columbine
Connecticut	Mountain Laurel
Delaware	Peach Blossom
District of Columbia	No choice
Florida	Orange Blossom
Georgia	Cherokee Rose
Idaho	Syringa
Illinois	Violet
Indiana	Carnation
Iowa	Wild Rose
Kansas	Sunflower
Kentucky	Trumpet Vine
Louisiana	Magnolia

Maine	Pine Cone and Tassel
Maryland	No choice
Massachusetts	Mayflower
Michigan	Apple Blossom
Minnesota	Moccasin Flower
Mississippi	Magnolia
Missouri	No choice
Montana	Bitter Root
Nebraska	Golden Rod
Nevada	Sagebrush
New Hampshire	No choice
New Jersey	No choice
New Mexico	Cactus
New York	Rose
North Carolina	Daisy
North Dakota	Wild Prairie Rose
Ohio	Scarlet Carnation
Oklahoma	Mistletoe
Oregon	Oregon Grape
Pennsylvania	No choice
Rhode Island	Violet
South Carolina	No choice
South Dakota	Pasque Flower
Tennessee	No choice
Texas	Bluebonnet
Utah	Sego Lily
Vermont	Red Clover
Virginia	No choice
Washington	Rhododendron
West Virginia	Rhododendron
Wisconsin	Violet
Wyoming	Indian Paintbrush

Many of these state flowers have been chosen by the school children, but in a number of cases the state legislature has dignified the use of the flower by making it the subject of a law. When a flower is adopted by the United States, as a nation, it will probably be the goldenrod, which blooms bravely and freely from sea to sea, and from the north of the country to the south.

The oldest of the national flowers is the violet, which was adopted by the city of Athens in the days of its glory. Then comes the shamrock of Ireland, though the leaf and not the flower in this case is the national emblem chosen. Most of us know the story of how, when his pagan listeners could not understand the Christian doctrine of the Trinity, St. Patrick picked a spray of the shamrock which bloomed on the ground at his feet. "Do you not see," he said, "in this wild flower, how three leaves are united on one stalk, and will you not then believe what I tell you, that there are indeed three Persons, and yet one God?" On St.

David's Day in the year 640, when the Angles and Saxons were still strangers in England, the Britons of Wales, with Caedwalla as their leader, sought to drive the invader away from the rocky fastnesses where they had taken refuge. To distinguish him from the foe, each man in the Welsh army plucked a leek and placed it in his cap. The Welshmen were victorious, and from that day on the leek has been the national emblem of Wales.

The story of the Scotch emblem is something the same. The Danes, who invaded Scotland in the eleventh century, sought to take a fortress by surprise and removed their shoes to swim across the moat at night. In the darkness they plunged into the moat, to find that it was full of thistles instead of water. Their cries of pain warned the garrison and the attack was repulsed. Scotland was saved, and in remembrance of the victory the purple thistle flower was adopted as the national flower. The rose of England brings us back to the Wars of the Roses, when the Yorkists wore a white rose and the Lancastrians a red rose as a badge. Henry VIII, a Lancastrian, married a daughter of the House of York, and made a red and white rose the badge of England. Louis VII of France took the white fleur-de-lis, probably the white iris, for his badge, when he went to the Holy Land on a crusade, as a symbol of the purity of his motives. Since that time the lily has been looked upon as the emblem of France. Before the tri-color became the flag of France, the white lilies on a blue ground led the French armies forward to many a glorious field of battle. The blue cornflower reminds the German people of Queen Louise, the brave and gentle Queen of Prussia, who, when she fled to the fields to escape being taken prisoner by Napoleon in Berlin, amused her children by weaving wreaths for them of this pretty flower. The maple tree has always had a peculiar place in the affections of the Canadian people, and early in the history of the country the maple leaf was adopted as a national emblem. Canadian children sang of it joyously; now they sing of it proudly, and no Canadian can ever forget the traditions made by the men who wore it on the fields of France and Flanders.

THE NEXT QUESTIONS ARE ON PAGE 5871.

The Book of POETRY

PATRIOTIC AND NATIONAL SONGS

MUSIC and song are the expression of emotion and feeling and nowhere is this more apparent than in the history of the patriotic songs of different peoples. A nation is not obliged to have a national song, as it is to have a settled form of government and laws for the state. But in some crisis of national life a song arises which embodies the sentiments of the hour and, because it satisfies this need for expression of a whole people, it endures, and in time becomes a national hymn. Sometimes it is the music which possesses popular fancy; sometimes it is the words. In other parts of our book you will find much British, French and Canadian patriotic poetry. We have given place in this section to countries not so well represented, including the National Songs of America. The history of "The Star-Spangled Banner" is found on page 5491.

The National Songs of Austria, Holland, Denmark, Italy, Finland, Norway, Roumania and Sweden, included in this section, are taken from "Airs of All Lands," by John Philip Sousa, by permission of Carl Fischer, publisher.

THE STAR-SPANGLED BANNER

O! SAY, can you see, by the dawn's early light,
What so proudly we hailed at the twilight's last gleaming—
Whose broad stripes and bright stars, through the clouds of the fight,
O'er the ramparts we watched were so gallantly streaming?
And the rocket's red glare, the bombs bursting in air,
Gave proof through the night that our flag was still there;
O! say, does that star-spangled banner yet wave
O'er the land of the free, and the home of the brave?

On that shore dimly seen through the mists of the deep,
Where the foe's haughty host in dread silence reposes,
What is that which the breeze, o'er the towering steep,
As it fitfully blows, now conceals, now discloses?
Now it catches the gleam of the morning's first beam,
In full glory reflected now shines on the stream;
'Tis the star-spangled banner; O! long may it wave,
O'er the land of the free, and the home of the brave!

And where is that band who so vauntingly swore
That the havoc of war and the battle's confusion
A home and a country should leave us no more?
Their blood has washed out their foul footsteps' pollution.
No refuge could save the hireling and slave
From the terror of flight, or the gloom of the grave;
And the star-spangled banner in triumph doth wave
O'er the land of the free, and the home of the brave.

O! thus be it ever, when freemen shall stand
Between their loved homes and war's desolation!
Blest with victory and peace, may the Heav'n-rescued land
Praise the power that hath made and preserved us a nation.
Then conquer we must, for our cause it is just,
And this be our motto — "In God is our trust;"
And the star-spangled banner in triumph shall wave,
O'er the land of the free, and the home of the brave.

COLUMBIA, THE GEM OF THE OCEAN

Although Christopher Columbus discovered the West Indies, and never set foot upon the mainland of America (see page 64), it was at first proposed to call this new land, "Columbia." Some of our patriotic songs refer to our country by this name. This song was written by Thomas à Becket in 1843, and "Hail Columbia" by Joseph Hopkinson, a young lawyer, in 1798. It was suggested by David T. Shaw.

OH, Columbia, the gem of the ocean,
The home of the brave and the free,
The shrine of each patriot's devotion,
A world offers homage to thee,
Thy mandates make heroes assemble,
When Liberty's form stands in view;
Thy banners make tyranny tremble,
When borne by the red, white and blue,
Thy banners make tyranny tremble,
When borne by the red, white and blue.

When war wing'd its wide desolation,
And threaten'd the land to deform,
The ark then of Freedom's foundation,
Columbia, rode safe thro' the storm:
With the garlands of vict'ry around her,
When so proudly she bore her brave crew,
With her flag proudly floating before her,
The host of the red, white and blue,
With her flag proudly floating before her,
The host of the red, white and blue.

The star-spangled banner bring hither,
O'er Columbia's true sons let it wave;
May the wreaths they have won never wither,
Nor its stars cease to shine on the brave.
May the service united ne'er sever,
But hold to their colors true;
The army and navy forever,
Three cheers for the red, white and blue,
The army and navy forever,
Three cheers for the red, white and blue.

YANKEE DOODLE

"Yankee Doodle," has been called "the nursery rhyme of the American Army." It is difficult to account for its popularity, but it cheered the ragged soldiers of the Revolution, and has lived in spite of all efforts to replace it with words more appropriate.

FATHER and I went down to camp,
Along with Captain Good'in,
And there we saw the men and boys,
As thick as hasty puddin'.

CHORUS:

Yankee Doodle, keep it up,
Yankee Doodle dandy,
Mind the music and the step,
And with the girls be handy.

And there we see a thousand men,
As rich as Squire David;
And what they wasted ev'ry day,
I wish it could be saved.

The 'lasses they eat ev'ry day,
Would keep a house a winter;
They have so much that, I'll be bound,
They eat it when they've mind to.

And there I see a swamping gun,
Large as a log of maple,
Upon a mighty little cart;
A load for father's cattle.

The troopers, they would gallop up,
And fire right in our faces;
It scared me almost half to death
To see them run such races.

It scared me so I hooked it off,
Nor stopped, as I remember,
Nor turned about till I got home,
Locked up in mother's chamber.

DIXIE

There are many versions of "Dixie," usually absolute nonsense, but this particular one shows how intensely Southerners felt at the time of the Civil War. Happily we are now welded together as one country, united in loyalty and devotion to the nation.

SOUTHRONS, hear your country call you!
Up, lest worse than death befall you!
To arms! To arms! To arms, in Dixie!
Lo! all the beacon-fires are lighted,—
Let all hearts be now united!

To arms! To arms! To arms, in Dixie!
Advance the flag of Dixie!
Hurrah! hurrah!

For Dixie's land we take our stand,
And live or die for Dixie!

To arms! To arms!
And conquer peace for Dixie!
To arms! To arms!
And conquer peace for Dixie!

Hear the Northern thunders mutter!
Northern flags in South winds flutter!
Send them back your fierce defiance!
Stamp upon the accursed alliance!

Fear no danger! Shun no labor!
Lift up rifle, pike and sabre!
Shoulder pressing close to shoulder,
Let the odds make each heart bolder!

How the South's great heart rejoices
At your cannons' ringing voices!
For faith betrayed, and pledges broken,
Wrongs inflicted, insults spoken.

Strong as lions, swift as eagles,
Back to their kennels hunt these beagles!
Cut the unequal bonds asunder!
Let them hence each other plunder!

Swear upon your country's altar
Never to submit or falter,
Till the spoilers are defeated,
Till the Lord's work is completed.

Halt not till our Federation
Secures among earth's powers its station!
Then at peace, and crowned with glory,
Hear your children tell the story!

If the loved ones weep in sadness,
Victory soon shall bring them gladness,—
To arms! To arms! To arms, in Dixie!
Exultant pride soon banish sorrow,
Smiles chase tears away to-morrow.

To arms! To arms! To arms, in Dixie!
Advance the flag of Dixie!
Hurrah! hurrah!

For Dixie's land we take our stand,
And live or die for Dixie!

To arms! To arms!
And conquer peace for Dixie!
To arms! To arms!
And conquer peace for Dixie!

MY COUNTRY, 'TIS OF THEE

This song, written in 1832, by an American Baptist clergyman named Samuel Francis Smith, has long been regarded as the national hymn of the American people, breathing, as it does, the spirit of liberty which the government of our country offers to its citizens and to the thousands from other lands.

MY country, 'tis of thee,
Sweet land of liberty,
Of thee I sing;
Land where my fathers died,
Land of the pilgrim's pride,
From every mountain side
Let freedom ring.

My native country, thee—
Land of the noble free—
Thy name I love;
I love thy rocks and rills,
Thy woods and templed hills;
My heart with rapture thrills
Like that above.

Let music swell the breeze,
And ring from all the trees
Sweet freedom's song:
Let mortal tongues awake;
Let all that breathe partake;
Let rocks their silence break—
The sound prolong.

Our father's God, to Thee,
Author of liberty,
To Thee we sing:
Long may our land be bright
With freedom's holy light,
Protect us by Thy might,
Great God, our King

BATTLE-HYMN OF THE REPUBLIC

Mrs. Julia Ward Howe, who, in her ninety-second year, died in 1910, may be described as one of the most eminent women of America. She won fame both as a writer and a speaker, and wrote many books, but will be remembered chiefly for this celebrated poem, written in the early days of the American Civil War, to encourage the soldiers of the North in fighting for the preservation of the Union.

MINE eyes have seen the glory of the coming
of the Lord:
He is trampling out the vintage where the
grapes of wrath are stored;
He hath loosed the fateful lightning of His
terrible swift sword:
His truth is marching on.

I have seen Him in the watch-fires of a hundred
circling camps;
They have builded Him an altar in the evening
dews and damps;
I can read His righteous sentence by the dim
and flaring lamps:
His day is marching on.

I have read a fiery gospel writ in burnish'd
rows of steel:
"As ye deal with my contemners, so with
you My grace shall deal;
Let the Hero, born of woman, crush the serpent
with His heel,
Since God is marching on."

He hath sounded forth the trumpet that shall
never call retreat;
He is sifting out the hearts of men before
His judgment-seat:
Oh, be swift, my soul, to answer Him! Be
jubilant, my feet!
Our God is marching on.

In the beauty of the lilies Christ was born
across the sea,
With a glory in His bosom that transfigures
you and me:
As He died to make men holy, let us die to
make men free,
While God is marching on.

AMERICA, THE BEAUTIFUL

This very beautiful hymn, written by Katherine Lee Bates, expresses the vision which all high-hearted men have dreamed. The first verse is unequalled in the picture which it presents in four lines.

O BEAUTIFUL for spacious skies,
For amber waves of grain,
For purple mountain majesties
Above the fruited plain!
America! America!
God shed his grace on thee,
And crown thy good with brotherhood
From sea to shining sea!

O beautiful for pilgrim feet,
Whose stern, impassioned stress
A thoroughfare for freedom beat
Across the wilderness!
America! America!
God mend thine every flaw,
Confirm thy soul in self-control,
Thy liberty in law!

O beautiful for glorious tale
Of liberating strife,
When valiantly for man's avail,
Men lavished precious life!
America! America!
May God thy gold refine,
Till all success be nobleness,
And every gain divine!

O beautiful for patriot dream
That sees beyond the years
Thine alabaster cities gleam
Undimmed by human tears!
America! America!
God shed his grace on thee,
And crown thy good with brotherhood
From sea to shining sea!

AUSTRIA

The story runs that during his visit to London Haydn was so stirred by the strains of "God save the King" that on his return to Vienna he composed a national anthem on similar lines for his own country. This hymn was first sung in 1797.

GOD preserve our noble Emp'ror,
Franz our Emp'ror good and great!
Mighty ruler! high in wisdom,
We his glory celebrate!
Love shall twine him laurel garlands,
They become his regal state!
God preserve our noble Emp'ror,
Franz our Emp'ror good and great!

Over blooming lands his sceptre
Doth extend both wide and far;
Of his throne the noblest pillars
Righteousness and mercy are.
Over all his shield extended
Beams effulgent as a star.

To array himself in virtue,
Ever was his constant care;
Only to defend his people
Doth his sword flame high in air.
In their blessings thus rewarded,
He finds all his pleasure there.

Bonds of slavery he has broken,
He has made his people free,
He of knighthood is the flower,
Brave and good and true is he;
And when comes his latest hour,
May he by angels greeted be.

HOLLAND

WIE NIERLANSCH

These verses were written in 1815 by the Dutch poet Hendrik Van Tollens and set to music by Smits in 1820, since when it has been the national song of the country.

LET him in whom old Dutch blood flows,
Untainted, free and strong,
Whose heart for Prince and country glows,
Now join us in our song;
Let him with us lift up his voice,
And sing in patriot band,
The song at which all hearts rejoice,
For Prince and Fatherland!

We brothers, true unto a man,
Will sing the old song yet;
Away with him who ever can
His Prince or land forget!
A human heart glow'd in him ne'er,
We turn from him our hand,
Who callous hears the song and pray'r
For Prince and Fatherland!

Preserve, O God, the dear old ground
Thou to our fathers gave;
The land where we a cradle found
And where we'll find a grave!
We call, O Lord, to Thee on high,
As near death's door we stand.
Oh! safety, blessing, is our cry,
For Prince and Fatherland.

Loud ring thro' all rejoicing here,
Our pray'r, O Lord, to Thee;
Preserve our Prince, his House, so dear
To Holland, great and free!
From youth thro' life be this our song,
Till near to death we stand!
O God, preserve our sov'reign long,
Our Prince and Fatherland.

DENMARK

KONG CHRISTIAN STOD VED HIERN MAST

The melody is of ancient origin and the author unknown. Since about 1775 it has been regarded as the national song of Denmark. The verses recall, and sing praises of, various Danish heroes.

KING CHRISTIAN stood beside the mast
In smoke and mist;
His glitt'ring sword was swinging fast,
Thro' hostile heads it swiftly pass'd,

Then sank each Gothic hulk and mast
In smoke and mist.
Fly! shouted they, for no man can
The power of Denmark's Christian
Resist!

Nils Juel heard the tempest high,
'Tis now the hour!
He raised the red flag t'ward the sky,
And smote the foe till all did cry
Aloud above the tempest high,
'Tis now the hour!
Fly! called they, who his life would save!
Of Denmark's Juel who can brave
The pow'r?

North Sea! a glimpse of Wessel brake
Thy low'ring sky!
Thy knights are fighting for thy sake,
Within the sea foes refuge take,
A cry of wild despair doth break
Thy low'ring sky!
Fly! shouted they, even warriors bold
From Denmark thunders Torkenskiold,
Then fly!

Path of the Dane to fame and pow'r,
Dark-rolling flood!
Receive the friend who ne'er did cow'r
Before grim death in danger's hour,
But braves, as thou, the tempest's pow'r,
Dark-rolling flood!
Thy wat'ry arms my graves shall be!
Receive in war and victory
My blood!

ITALY

GARIBALDI'S HYMN

Italy has two national airs: The Marche Royale and Garibaldi's War Hymn, but the March has no words. This hymn was written in 1859 by Mercantini, and the music is attributed to Olivieri.

FROM out the tomb the dead heroes are
speaking,
Martyrs of old retribution are seeking,
Their swords now at rest, 'round each head
shines a halo,
With Italy's motto engraved on each breast,
Come, forward all, come forward!
Rise, comrades, brave and glorious,
Unfurl the banner for we'll be victorious,
We'll give our foe the sword and likewise
the dreaded fire-brand,
For we must conquer, 'tis Italy's command,
So fight with the sword,
So fight with the sword,
With fire and sword,
With fire and sword.

FINLAND

VART LAND

The words of Finland's national song are from the pen of the poet Runeberg and the music by Frederik Pacius, a pupil of Spohr. There are eleven verses, of which the first only is given here.

OUR land, our land, our Fatherland!
Thou glorious word, ring forth!
No mountain rises proud and grand,
Nor slopes a vale, nor sweeps a strand,
More dear than thou, land of the North,
Our father's native earth.

NORWAY SONNER AF NORGE

These verses, which show a distinct leaning for democracy, were written by H. A. Bjerregaard, and were set to music by C. Blom about fifty years ago.

SONS of dear Norway, O proud and ancient kingdom,

Sing to the harp in a jubilant song!
Proudly exult in possession of freedom,
Honor your land, to which honors belong,
Glory hestowing,
Patriots showing.

How to be worthy the fatherland dear,
Throbbing our hearts and our faces glowing,
Singing of freedom in melody clear.

Land of great mountains, snow-peaked,
cloud-capped and rugged,
Vales rich and fertile and seas filled with fish!

Now and for all time, thy people love thee dearly,
Would die for thy sake, if 'tis thy royal wish.

Dearest of mothers,
We stand as brothers,
Pledged to defend thee for liberty's sake,
Grow, grand old nation, surpassing all others,
Until the waves on thy shores cease to break.

BELGIUM LA BRABANÇONNE

This song appeared in 1830, during the war between Belgium and Holland, when the Belgians wanted to be released from Dutch rule. The verses were written by Jenneval, and set to music by Francois Van Campenhout. This is a recent translation.

LONG years of bondage having ended,
The Belgian, rising from his shame,
Regains at last by courage splendid
His flag, his rights and ancient name.
And thy hand, supreme and glorious,
That nations of the earth may see,
Shall write on thy flag victorious
"The King, the Law, and Liberty!"

March on then with shoulder to shoulder;
March on then from progress to progress,
God sees thy courage growing bolder
And smiles at thy virile success.
Let us work! May our efforts render
To our fields due fertility;
And let the arts crown with their splendor
The King, the Law and Liberty.

Let us open our ranks, forgetting
Old feuds with foemen we have known;
Ere our Life's sun sinks to its setting
All Dutchmen as brothers we'll own.
Let us hold out the hand in greeting,
And may truth and fraternity
Inspire our song while Time is fleeting:
"The King, the Law and Liberty."

Oh, Belgium, Mother, may we ever
Devote our heart and arms to thee;
God grant thy future sons may never
Forget thee in the days to be.
Thou shalt live ever great and splendid,
In bonds of lasting unity
And thy watchword till Time be ended,
"The King, the Law, and Liberty!"

ROUMANIA TRACASCA REGELE

In 1861 the government of Roumania offered a prize for the best national hymn. This is the hymn which won the prize, and was adopted by the Roumanian army, January 22, 1862.

LONG live the King in peace,
Long may his pow'r increase,
Long may he reign o'er us,
Shout we loud the chorus.
Ruler grand, thy glorious land
Predicts success for thee.
Evermore, in peace or war,
Great King triumphant be.
Oh, Holy Land, Heavenly Father,
Uphold, with thy mighty hand,
The crown and land of Roumania.

SWEDEN UR SVENSKA HJERTANS

Although an adaptation of the words of "God save the King" is the Swedish National Anthem, this song by the poet Strandberg has been adopted officially by the court and is sung on public occasions.

OUR Swedish feelings for our king
In voices patriotic sing,
God bless our land and king.
In cheerfulness and sweet content,
In happiness our lives are spent,
So sing with voices eloquent,
God bless our land and King!

ARMENIA HYMN TO LIBERTY

The author of this song was a Russian Armenian, who fell under suspicion for his political opinions and suffered exile for them. Under the Empire it was forbidden to possess a picture of Nalbandian; but portraits of him, with his poem on Liberty printed around the margin, were printed secretly.

WHEN God who is forever free,
Breathed life into my earthly frame,—
From that first day, by his free will
When I a living soul became,—
A babe upon my mother's breast,
Ere power of speech was given to me,
Even then I stretched my feeble arms
Forth to embrace thee, Liberty!

RUSSIA

The Hymn of Free Russia was composed by Konstantin Balmont, in Moscow, March, 1917, during the course of the Russian Revolution. Gretchaninoff, composer of this stirring martial music, is one of Russia's best known composers to-day.

YOUNG Russia, hail, victorious!
All praise we chan' to thee.
Amid the nations, glorious
Thou standest, proud and free.

No tyrant shall enslave thee,
Thy sun arises bright!
All hail to those who gave thee
New Freedom's sacred light!

A song of countless voices
Resounds from shore to shore,
The Russian folk rejoices
With Freedom evermore!

SCOTLAND

WE'LL HA'E NANE BUT HIGHLAND BONNETS HERE

The first verse of this fine song by Alexander MacLagan breathes the spirit of the poem. The words of the refrain were shouted to his men by Sir Colin Campbell when charging the heights of Abua. The effect of this rallying cry is well known. The poem was dedicated to Sir Colin Campbell.

A LMA, field of heroes, hail!
Alma, glorious to the Gael!
Glorious to the symbol dear,
Glorious to the mountaineer.
Hark, hark to Campbell's hattle-song!
It led the brave to victory;
It thundered through the charging cheer,
We'll ha'e nane but Highland bonnets here!
We'll ha'e nane but Highland bonnets here!
We'll ha'e nane but Highland bonnets here!
It thundered through the charging cheer,
We'll ha'e nane but Highland bonnets here!

JAPAN

The words of the Japanese national anthem are interesting, full of poetry and show that loyalty to the monarch as the representative of the whole people for which Japan is famous. The English version reads:

UNTIL this grain of sand,
Tossed by each wavelet's freak,
Grow to a cloud-girt peak
Towering above the land;
Until the dewy flake
Beading this blossom's gold
Swell to a mighty lake—
Age upon age untold
Joy to joy manifold
Add for our sovereign's sake.

PORTUGAL

PORTUGUESE NATIONAL HYMN

Portugal became a republic in 1910, and the new National Hymn was written in celebration of this great event by Henrique Lopes de Mendonça. The rather free translation preserves the spirit of the original, which breathes through the verses.

NOBLE heroes of the sea,
Nation valiant and immortal,
Raise again thine ancient splendor,
Portugal!
Among the mists of memory,
O, my country, hear the voice
Of the great, illustrious dead
Who shall guide to victory.

CHORUS:

To arms, to arms, on land and sea!
To arms, to arms, our country to free!
Against the cannon to march, to march!

Unfurl thine unconquered flag,
Living beam that lights the sky,
Europe cries to all the world
Unconquered still is Portugal!
Ocean kisses thy fair shores,
Laps thee with her loving waves,
Portugal with circling arms,
To the world new countries gives.

To arms, to arms, on land and sea!
To arms, to arms, our country to free!
Against the cannon to march, to march!

Greet the sun whose healing power
Shines upon the future rife;
Let the echo of attack
Be the signal of new life;
Rays of this, the coming dawn
Like to mother's kisses are
To inspire and hold us brave
Against the blows of ruthless power.

To arms, to arms, on land and sea!
To arms, to arms, our country to free!
Against the cannon to march, to march!

GERMANY

DIE WACHT AM RHEIN

This was written by Schneckenburger, in 1840, and its most popular setting was to a tune composed by Carl Wilhelm. France and Germany have had a long-continued struggle for possession of the Rhine.

WITH thunder shout the air is rent,
Like roar of waves and sword-clash
blent

"Now of the German Rhine so free,
Who will the river's guardian be?"
Thou fatherland, mayst tranquil be,
Thy faithful sons will watch o'er thee,
Steadfast and true, each son of thine
Stands sentry o'er our noble Rhine!

The people hear that mighty cry,
Like lightning flashes ev'ry eye.
That landmark ev'ry heart will keep,
And watch unsleeping o'er the deep.

Thy tide reflects the heav'ns above,
And heroes gaze on thee with love,
And proudly breathe a vow to thee,
Thou, Rhine, shalt ever German be.

So long as blood flows in each vein,
Or hands to draw the sword remain,
And while an arm is in the land,
No foe shall walk upon thy strand.

The waves re-echo back the cry,
The standard in the breeze doth fly,
The Rhine, the German Rhine, so free,
Yes, we will all thy guardians be.

WALES

MARCH OF THE MEN OF HARLECH

This battle hymn is beyond question the finest specimen of martial music in the world. The name of the composer is unknown, but it was probably written during the War of the Roses, when Harlech Castle was besieged on behalf of King Edward IV, 1468-9.

MEN of Harlech! in the hollow,
Do ye hear, like rushing hillow,
Wave on wave that surging follow,
Battle's distant sound?
'Tis the tramp of Saxon foemen,
Saxon spearmen, Saxon bowmen,—
Be they knights, or hinds, or yeomen,
They shall bite the ground!

Loose the folds asunder,
Flag we conquer under!
The placid sky now bright on high
Shall launch its bolts in thunder!
Onward! 'tis our country needs us.
He is bravest, he who leads us!
Honor's self now proudly heads us!
Cambria, God, and Right!

Rocky steeps and passes narrow
Flash with spear and flight of arrow
Who would think of death or sorrow?
Death is glory now!
Hurl the reeling horseman over!
Let the earth dead foemen cover!
Fate of friend, of wife, of lover
Trembles on a blow!

Strands of life are riven;
Blow for blow is given,
In deadly lock or battle shock,
And mercy shrieks to heaven!
Men of Harlech! young or hoary,
Would you win a name in story?
Strike for home, for life, for glory!
Cambria, God, and Right!

SERVIA

Neither the author nor the composer of this song is known, but in 1848, when the Servians were fighting against the Hungarians, the song became popular.

RISE, ye Serbians, rise as one!
Night is past, now dawns the sun:
Freedom and your country call you,
Bright your banner flies,
Let no tyrant's chain enthrall you,
Arm, O Serbians, arm and rise!

Onward to the battlefield,
Bid the haughty foeman yield.
Freedom and your country need you,
Serbia to her children cries,
On, for victory is the prize,
Forth to fight, and Heav'n shall speed you,
Arm, O Serbians, arm and rise!

GREECE HYMN TO LIBERTY

These four stanzas of the Greek "Hymn to Liberty" rank with any national poetry which has been written. This translation by Mrs. S. G. Canoutas follows the original metre very closely and cleverly.

"FROM thy fearful sword I know thee
With its sharpened edge and bright;
From the glance which as the lightning
Spans the earth in length and height.
From the sacred bones thou comest
Of the brave that are no more.
Liberty, we hail, Oh, hail thee,
Ever valiant as of yore.

"There in silent expectation
Thou awaitest, sad and shy
Till a voice of hope and valor,
'Come again,' to thee should cry;
But that day was far and distant;
All was plunged in silence deep,
Crushed with terror, awed with darkness,
And benumbed in slavery's sleep.

"Thou, alas, for only comfort
Hadst the splendor of past years,
Calling back the deeds of glory
And relating them with tears.
Then awaiting, still awaiting.
For a friendly freedom's call.
In despair thy hands thou wringest,
Weeping for thy bitter thrall.

"When, oh, when, will some one call me
From the wilderness to rise?
Sounds of chains and groans and clamors
Was the answer to thy cries.
Then to Heaven thou upraised
A look dim with tearful flood
And upon thy robe were falling
Drops of pure Hellenic blood."

MEXICO MEXICAN NATIONAL HYMN

OH my country, entwine on thy temples,
Boughs of olive so fresh and so vernal,
When inscribed in the heavens eternal,
Blessed peace for all the land thou dost see!
But if stranger and foe, in their boldness,
Dare to tread on thy soil, they must perish.
Then oh! my country, this thought only
cherish:

Ev'ry son is but a soldier for thee,
Ev'ry son is but a soldier for thee.

CHORUS:
At the loud cry of war all assemble;
Then your swords and your steeds all pre-
pare,
And the earth to its centre shall tremble,
When the cannon's deep roar rends the air.
And the earth to its centre shall tremble,
When the cannon's deep roar rends the air.

SWITZERLAND SWISS NATIONAL HYMN

The Swiss National Hymn should not be confused with the National Anthem, but this hymn is as well-known, and by many people is considered the National Song of Switzerland. It was written by Leonard Widmer (1848) and translated by C. Fred Silberbauer.

WHEN Thou com'st with reddening dawn,
Thee I see in rays of morn,
Thro' eternity and time, Lord Sublime!
When the Alps are crimson-glowing,
Be your prayers, free Switzers, flowing
Unto God, Whose Fatherland
Leads you to His Heavenly Land.

When the shades of eve are here,
Thee I find in starry Sphere,—
Thee as Friend of man adored, Loving Lord!
From yon shining realms Elysian
Grant to me that blessed vision
Which true spirits understand:
God, in Heavenly Fatherland.

If thick mists the heights enshroud,
Then I seek in seas of cloud
Thee, whose depths no man can learn, Loving
Eternal!

Lo, o'er vapors gray victorious,
Leads the sun his pageant glorious,
Bidding earthlings understand:
God in Heavenly Fatherland.

As Thou ridest the raging blast;
Be Thyself our Refuge fast
Whose hid purpose cannot err, Rescuer!
In each night of storm and terror,
Childlike trusting without error,
May our spirits understand:
God in Heavenly Fatherland.

IRELAND

THE WEARIN' O' THE GREEN

The song appeared as a street ballad during the Irish rebellion of 1798. It was forbidden by the authorities, who also sternly repressed the wearing of the shamrock as the national emblem. This law has now been officially withdrawn.

OH! Paddy dear, and did you hear the
news that's goin' round?
The shamrock is forbid by law to grow on
Irish ground;
Saint Patrick's day no more we'll keep, his
color can't be seen,
For there's a cruel law agin the wearin' o'
the green.
I met with Napper Tandy and he took me
by the hand,
And said he, "How's poor old Ireland and
how does she stand?"
"She's the most distressful country that ever
yet was seen,
They're hanging men and women there for
wearin' o' the green."

Then since the color we must wear is Eng-
land's cruel red,
'Twill serve but to remind us of the blood
that has been shed;
You may take the shamrock from your hat
and cast it on the sod,
But never fear, 'twill take root there tho'
under foot 'tis trod.
When laws can stop the blades of grass from
growing as they grow,
And when the leaves in summer time their
verdure dare not show,
Then I will change the color that I wear in
my caubeen,
But till that day, please God, I'll stick to
wearin' o' the green.

But if at last our color should be torn from
Ireland's heart,
Her sons with shame and sorrow from the
dear old isle will part,
I've heard a whisper of a land that lies be-
yond the sea,
Where rich and poor stand equal in the light
of freedom's day.
Oh, Erin, must we leave you, driven by a
tyrant's hand?
Must we ask a mother's blessing from a
strange and distant land?
Where the cruel cross of England shall never
more be seen,
And where, please God, we'll live and die
still wearin' o' the green.

THE FLAG

In nearly all our states, Flag Day is celebrated on June 14th, the anniversary of the adoption of the national flag by the Continental Congress in 1777.

OH say can you hear
In hush of the morn
The words of the Flag
As daylight is born?

"Lives one 'neath my stars,
Breathes one 'neath my fold
Who lives not for me
Till death strikes him cold?

"Then turn him adrift
On seas whence he came;
My stars cannot light
The depths of his shame."

The winds tell it well,
The message is clear;
'Tis thus speaks the Flag—
Oh say, can you hear?

POLAND

JEZCZE POLSKA

Skrzynecki, a Polish officer, was commander-in-chief of the Polish forces in their struggle to free themselves from Russian rule (1830-31). He gained some brilliant victories, but hesitated to pursue his advantage. The suspicion that he was in league with the Russians led to an inquiry, and he resigned.

POLAND'S not a slave for ever while her
sons alive remain,
What she lost, our strong endeavor soon
shall win again.
March, march, Dombrowski, lead us to
liberty,
All our chains are cast away,
Poland shall at last be free.

HEAR, O YE NATIONS!

This beautiful hymn by Frederick Lucian Hosmer, written in 1909, five years before the outbreak of the great European War, seems a prophecy of the time to come when war shall be no more

HEAR, hear, O ye nations, and hearing obey
The cry from the past and the call of
to-day!
Earth wearies and wastes with her fresh life
outpoured,
The glut of the cannon, the spoil of the
sword.

Lo, dawns a new era, transcending the old.
The poet's rapt vision, by prophet foretold!
From war's grim tradition it maketh appeal
To service of all in a world's commonweal.

Home, altar, and school, the mill, and the
mart,
The workers afield, in science, in art,
Peace-circled and sheltered, shall join to
create
The manifold life of the firm-built state.

Then, then shall the empire of right over
wrong
Be shield to the weak and a curb to the
strong;
Then justice prevail and, the battle-flags
furled,
The high court of nations give law to the
world.

And thou, O my country, from many made
one,
Last-born of the nations, at morning thy sun,
Arise to the place thou art given to fill,
And lead the world-triumph of peace and
good will!

The Book of THE UNITED STATES

WHAT THIS STORY TELLS US

MANY cities of the world have existed for hundreds of years, and their population has grown slowly. Many of them, in fact, have fewer people now than years ago. This story tells of a city which has become one of the largest cities of the world in much less than a hundred years. Built on low land by Lake Michigan, it has spread far and wide, and has also grown high into the air. Not only is the city great in size, but it is great in vigor and determination. No task is too great for the citizens to attempt and they have a fine record of accomplishment to their credit. This story tells of the growth of the city and of some of the things which the citizens have done. We show you some pictures, which will help you to understand what has been done.

CHICAGO, THE WONDER CITY

TO-DAY, as you have doubtless heard, Chicago is the fourth largest city in the world, with a population of about 2,500,000, and is still growing very rapidly. It is one of the greatest railroad centres in the world and in enterprise, industry and power to surmount obstacles is not behind any city in the world. The people of the city believe that they can do anything they set out to do, and they succeed. Yet hardly a hundred years ago the spot on which Chicago now stands was a stretch of wilderness with only a house or two to indicate the presence of human beings.

Apparently a settlement of Indians existed here in 1671, when it was visited by a fur trader, Nicholas Perrot. Joliet and Marquette visited it a little while later, and La Salle also stopped here. The French seem to have built a little fort here, but it did not continue long.

The United States in 1803 built Fort Dearborn on the south bank of the Chicago River, near the point where it flows into Lake Michigan, but the fort was destroyed by the Indians in 1812. It was rebuilt, but in 1836 was finally abandoned as the Indians had been removed across the Mississippi River.

CONTINUED FROM 5720

In 1830, when the town was laid out, twelve families lived within the limits, but at the time the fort was abandoned, the population was over 4,000. The rapid growth has continued, and it is now the second city in size in the United States. There has always been a spirit of hopefulness about the city which the great fire of 1871 did not check.

On October 8th of that year a cow kicked over a lamp in a stable on the outskirts of the city. The blaze grew beyond the control of the fire department and swept like a horrible monster, devouring the wooden buildings which then composed the greater part of the city. About 17,000 buildings were burned and nearly 100,000 persons were left homeless. The total loss was estimated at \$190,000,000. Undismayed, the citizens organized committees to relieve the distress, and distributed with care the contributions sent from other parts of the United States and from Europe.

They determined to build the new city in such a manner that such a calamity could never occur again, and ten years later a wonderful city of stone had replaced the old one of wood. Chicago has risen like a phoenix from the flames. The com-

mercial growth of the city has been wonderful. It is the greatest grain market and the great provision market of the world. To its stockyards come hundreds of thousands of animals, and Chicago meat is sent to every portion of the world. The city is also the great lumber centre, though with the continued destruction of the forests which gave her this position, she will not be able long to hold that rank.

The city now extends for twenty-four miles along Lake Michigan, and contains several lakes within its limits. A part of this lake front is given up to business, for many large vessels sail from the city, but a part has been reserved for park purposes. Some beautiful drives have been laid out beside the water.

The drinking water comes from Lake Michigan, many miles out, and great rivers are brought under the city. There are many tunnels through which freight is carried, and through which street cars run. In order to protect the water supply, the Drainage Canal was dug, one of the greatest engineering works of the country. The Chicago River was made to run backward, and take water from Lake Michigan instead of carrying water into it. By means of the Des Plaines River, the current was turned into the Mississippi. The two rivers were deepened and dug deeper toward the south. The canal is 110 to 160 feet wide at the bottom, and wider at the top. It is forty miles long. There are several other canals to carry the commerce of the mighty city.

Chicago has some of the finest public and commercial buildings in the United States. The people there claim that it was the first city to build high buildings such as we now see in all the great cities, and some of them are really beautiful. The foundations for these buildings must go deep down, sometimes a hundred feet, for the city is built upon sand and clay, and the solid rock is far below the surface. So great columns are driven down until they rest upon rock, and the building is perched upon them.

The great World's Fair, celebrating the four hundredth anniversary of the discovery of America by Columbus, was held in Chicago in 1893, a year late, to be sure. The wonderful "White City" was built on the shores of Lake Michigan, close to the spot where Perrot had

stood more than two hundred years before. The people of Chicago were determined to make the Fair a success and they succeeded.

To-day the spirit of the citizens stands for growth. The city has one of the best public school systems in the country; provides wide parks and playgrounds for its children; is making a determined effort to stamp out the "White Plague;" and is struggling for cleanliness and sanitation. Moreover, the citizens are making a determined effort to secure better government, and to control the men they choose to represent them.

This determination to accomplish whatever the citizens have decided will improve their city is one of the things which have made Chicago famous. While other cities are deliberating, Chicago very often goes ahead and has finished before they have begun. A citizen of Chicago is always willing to give liberally of his money or of his time when he is shown that the contribution will help the city in any way.

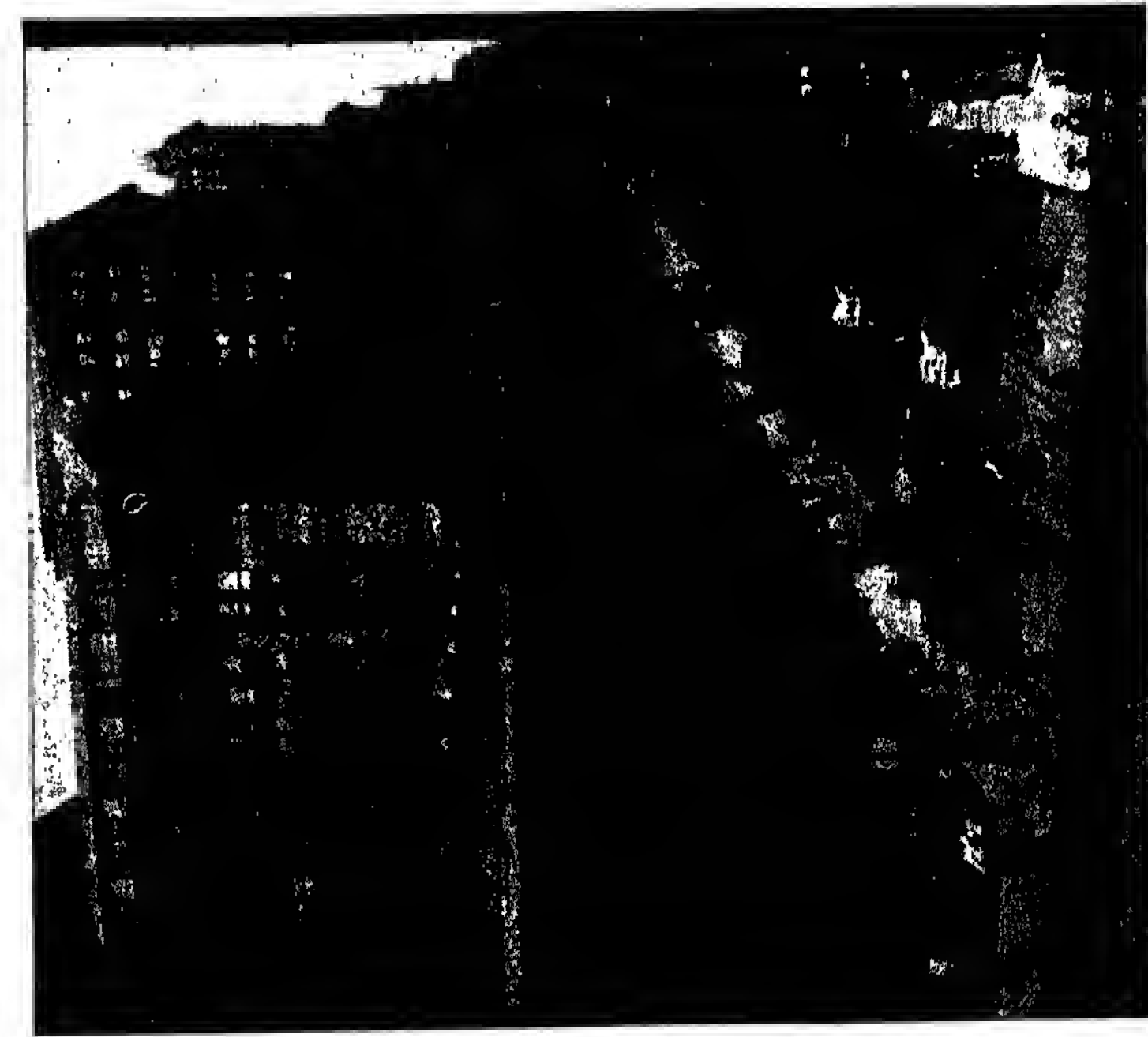
Men from every part of the earth have come to the great city. In its streets every language is spoken, and every type of mankind is to be seen. Many of these foreigners have prospered as they could never hope to do in their own countries, and some of them are counted among the best citizens of their adopted country. Of course, among so many thousands, some bad men have come, who have made trouble for those who wish to see the laws obeyed.

Men have sometimes said that all that Chicago cares for is bigness. We have already shown you that this is not true. Chicago does do big things, and it is proud that it has many things which no other city can equal. The city has a right to be proud of its wonderful growth, and of the immense business which is done every year.

Nor have the means of culture been neglected. It has some of the best educational institutions in the country, and had a fine orchestra long before other cities established such organizations. It encourages artists, and the exhibitions of pictures held there are often interesting. It contains some of the most beautiful public buildings in the United States and altogether the city seems certain to continue its wonderful progress.

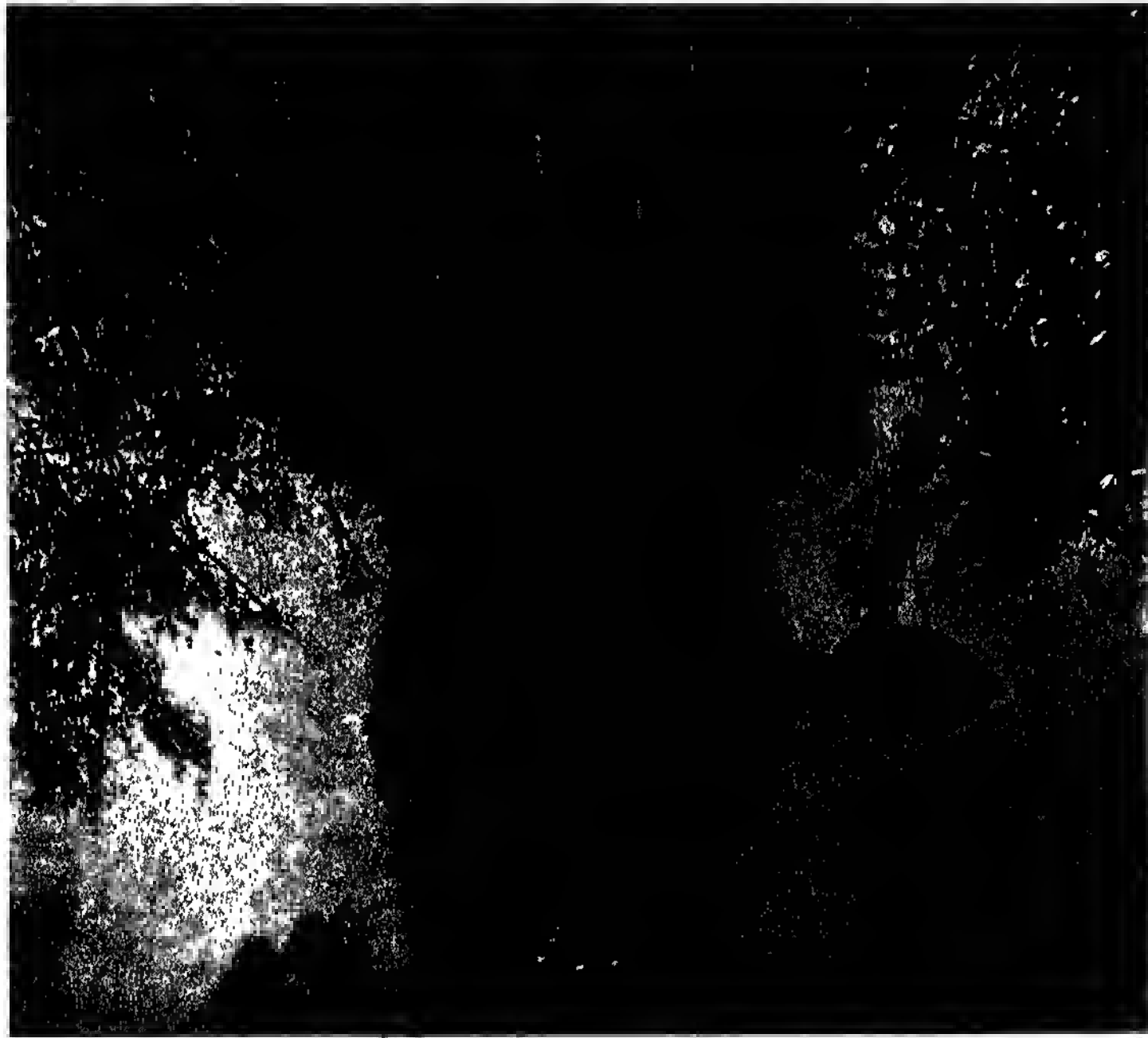
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IN THE HEART OF A GREAT CITY



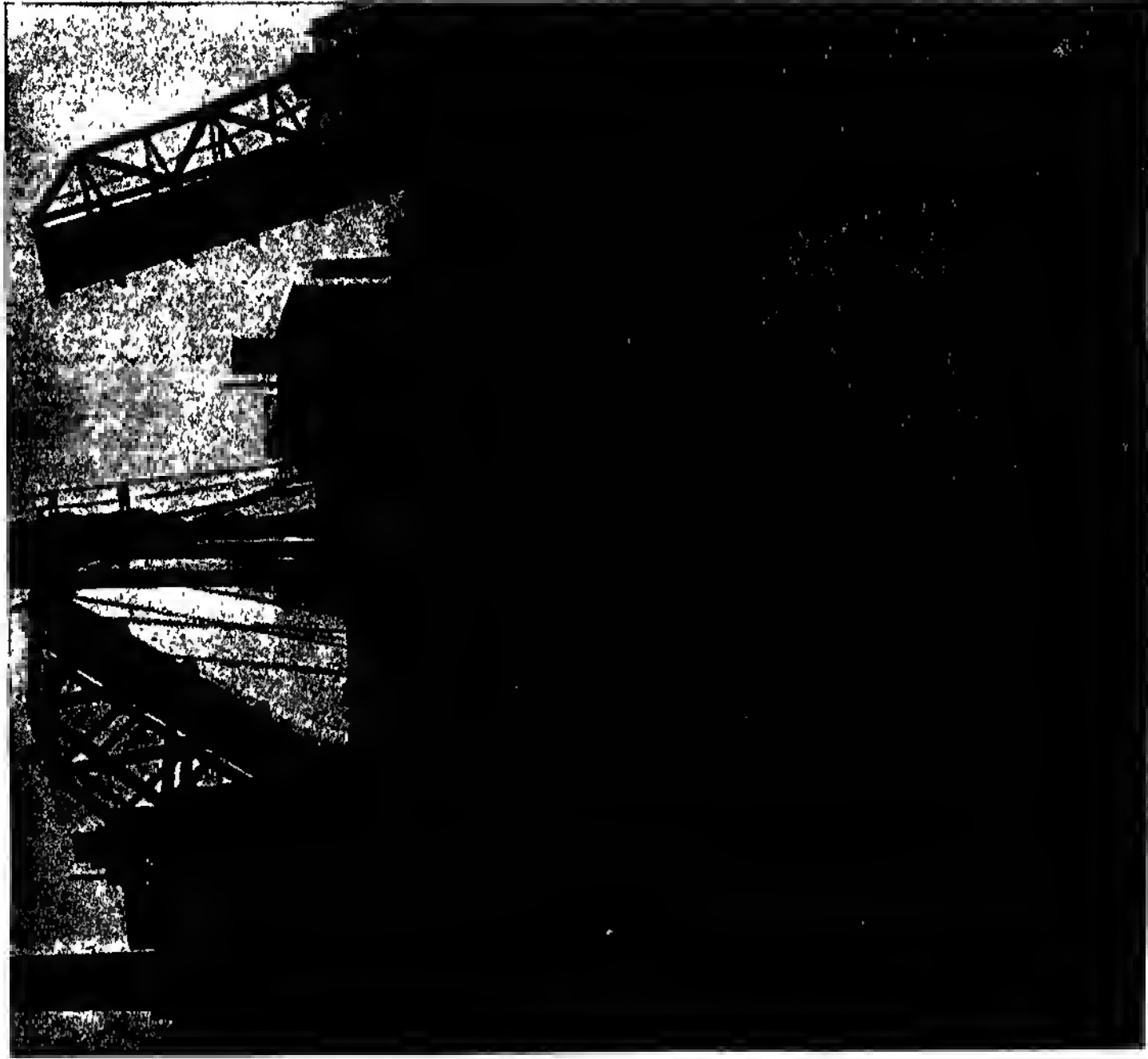
Here we see two streets in the busiest part of the city. To the left is Dearborn Street, with the great new Post Office across the way. To the right is La Salle Street, the very heart of the financial district. The building with the columns is the Illinois Trust & Savings Bank. It is in these streets that Chicago's commercial enterprises centre. Chicago architects and builders seem to have spent more care in making their great commercial buildings beautiful than those of many other cities.

THE PEOPLE'S PLAYGROUNDS



Here are two pretty scenes in Lincoln Park, one of the finest parks in Chicago—a city noted for its beautiful public parks. Among the principal features of interest in Lincoln Park are the statue of Lincoln by St. Gaudens, shown elsewhere in our book, and the Grant Monument, which can be seen in the picture to the right. The Grant statue faces Lake Michigan on the Lake Shore Drive. All of this park was once sand dunes by the shores of the lake, but is now covered with grass and trees.

THE GREAT TRADE AND TRAFFIC OF CHICAGO

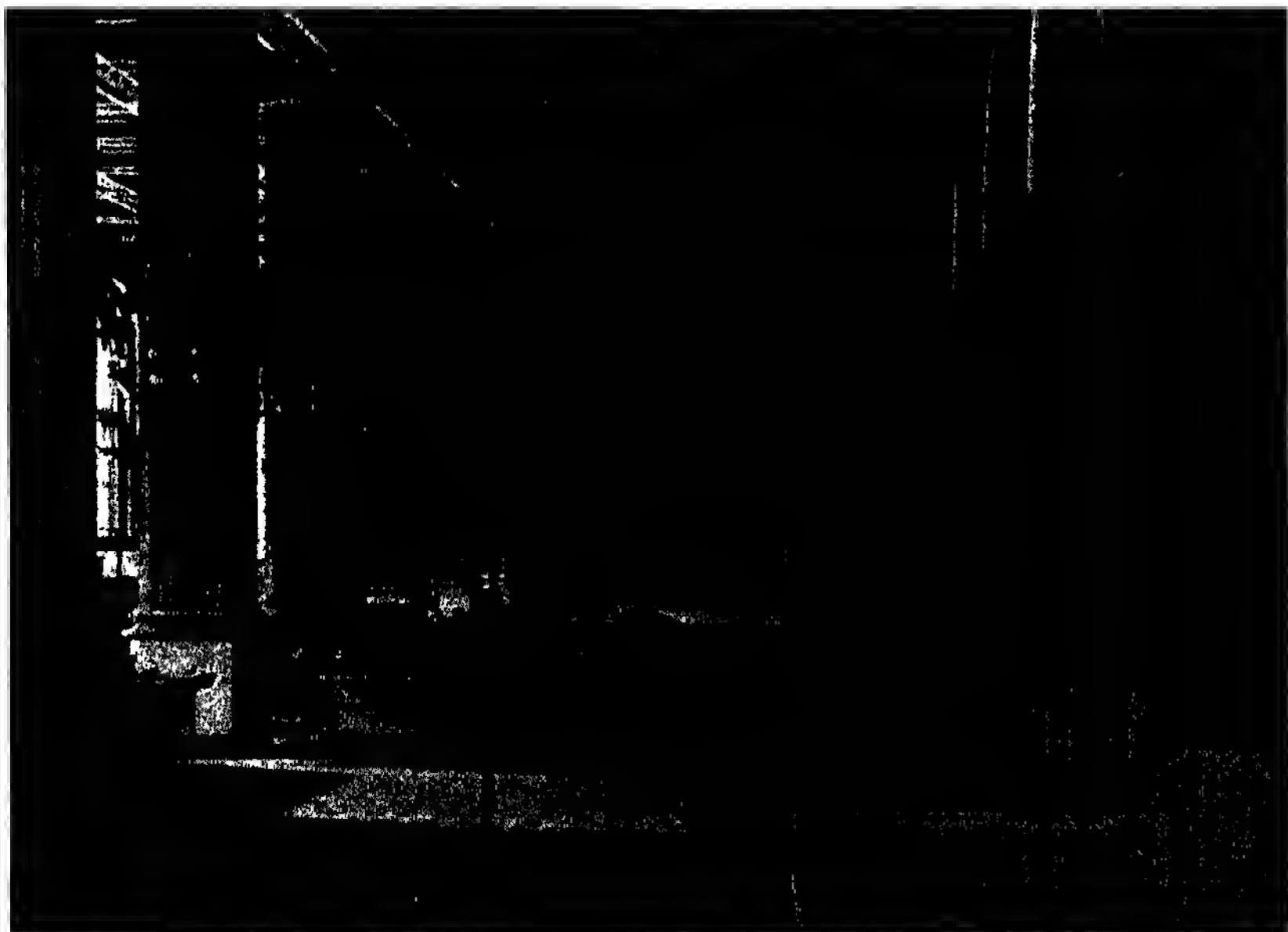


Chicago is one of the largest commercial cities in the world, so it must have every facility for forwarding its trade. Here is a picture of two of the railway bascule bridges on the Chicago River, which open up to allow the tall-masted schooners to pass through. On the right we see the Produce Market, from which comes some of the food to supply this mighty city. Chicago is by far the greatest food market in the world. Corn, wheat and meat are shipped to all parts of the world.

HALLS OF LEARNING AND OF WEALTH



Here is a picture of the University of Chicago, showing the campus and a few of its many buildings. This institution is one of the largest and most progressive in the country, and has a very fine library of over five hundred thousand volumes, which is made good use of by the thousands of students who attend the various departments. The university is open during the whole year.



Here we see a hall in the interior of the Chicago First National Bank. This is said to be the finest banking building in the world. Chicago, a city of about 2,500,000 people, with its immense commercial enterprises of every sort, necessarily does one of the largest banking businesses of any city in the world.

The Story of FAMOUS BOOKS

WHAT THIS STORY TELLS US

WASHINGTON IRVING'S Knickerbocker History of New York, from which this selection is taken, was published more than one hundred years ago. The work pretended to be written by an old Dutchman named Diedrich Knickerbocker, and described in humorous style the manners and customs of the early Dutch settlers of New Amsterdam, now New York. It gave sketches of the four Dutch governors Peter Minuit, Wouter Van Twiller, Wilhelm Kieft and Peter Stuyvesant. The descriptions are exaggerated, of course, but nevertheless have a basis of truth. This extract is from the chapter dealing with Wouter Van Twiller. You may read the story of Washington Irving's life in another place in the book.

KNICKERBOCKER DAYS IN NEW YORK

THE modern spectator, who wanders through the streets of this populous city, can scarcely form an idea of the different appearance they presented in the primitive days of the Governor, Wouter Van Twiller.

The busy hum of multitudes, the shouts of revelry, the rumbling equipages of fashion, the rattling of accursed carts, and all the spirit-grieving sounds of brawling commerce, were unknown in the settlement of New Amsterdam. The grass grew quietly in the highways—the bleating sheep and frolicsome calves sported about the verdant ridge where now the Broadway loungers take their morning stroll—the cunning fox or ravenous wolf skulked in the woods where now are to be seen the dens of Gomez and his righteous fraternity of money brokers—and flocks of vociferous geese cackled about the fields where now the great Tammany wigwam and the patriotic tavern of Martling echo with the wranglings of the mob.

In these good times did a true and enviable equality of rank and property prevail, equally removed from the arrogance of wealth, and the servility and heartburnings of repining poverty—and what in my mind is still more conducive to tranquillity and harmony among friends, a happy equality



of intellect was likewise to be seen. The minds of the good burghers of New Amsterdam seemed all to have been cast in one mold, and to be those honest, blunt minds which, like certain manufactures, are made by the gross, and considered as exceedingly good for common use.

Thus it happens that your true dull minds are generally preferred for public employ, and especially promoted to city honors,—your keen intellects, like razors, being considered too sharp for common service. I know that it is common to rail at the unequal distribution of riches, as the great source of jealousies, broils, and heartbreakings; whereas, for my part, I verily believe it is the sad inequality of intellect that prevails, that embroils communities more than anything else; and I have remarked that your knowing people, who are so much wiser than anybody else, are eternally keeping society in a ferment. Happily for New Amsterdam, nothing of the kind was known within its walls—the very words of learning, education, taste, and talents were unheard of—a bright genius was an animal unknown, and a bluestocking lady would have been regarded with as much wonder as a horned frog or a fiery dragon. No man, in fact, seemed to know more than his

neighbor, nor any man to know more than an honest man ought to know, who has nobody's business to mind but his own; the parson and the council clerk were the only men that could read in the community, and the sage Van Twiller always signed his name with a cross.

The person of this illustrious old gentleman was as regularly formed, and nobly proportioned, as though it had been modeled by the hands of some cunning Dutch statuary, as a model of majesty and lordly grandeur. He was exactly five feet six inches in height, and six feet five inches in circumference. His head was a perfect sphere, and of such stupendous dimensions, that Dame Nature, with all her sex's ingenuity, would have been puzzled to construct a neck capable of supporting it; wherefore she wisely declined the attempt, and settled it firmly on the top of his backbone, just between the shoulders. His body was of an oblong form, particularly capacious at bottom; which was wisely ordered by Providence, seeing that he was a man of sedentary habits, and very averse to the idle labor of walking. His legs, though exceeding short, were sturdy in proportion to the weight they had to sustain; so that when erect he had not a little the appearance of a robustious beer barrel, standing on skids. His face, that infallible index of the mind, presented a vast expanse, perfectly unfurrowed or deformed by any of those lines and angles which disfigure the human countenance with what is termed expression. Two small grey eyes twinkled feebly in the midst, like two stars of lesser magnitude in the hazy firmament; and his full-fed cheeks, which seemed to have taken toll of everything that went into his mouth, were curiously mottled and streaked with dusky red, like a Spitzenberg apple.

His habits were as regular as his person. He daily took his four stated meals, appropriating exactly an hour to each; he smoked and doubted eight hours, and he slept the remaining twelve of the four and twenty. Such was the renowned Wouter Van Twiller—a true philosopher, for his mind was either elevated above, or tranquilly settled below, the cares and perplexities of this world. He had lived in it for years, without feeling the least curiosity to know whether the sun revolved round it, or it round the sun; and

he had watched, for at least half a century, the smoke curling from his pipe to the ceiling, without once troubling his head with any of those numerous theories, by which a philosopher would have perplexed his brain, in accounting for its rising above the surrounding atmosphere.

In his council he presided with great state and solemnity. He sat in a huge chair of solid oak, hewn in the celebrated forest of the Hague, fabricated by an experienced timmerman of Amsterdam, and curiously carved about the arms and feet, into exact imitations of gigantic eagle's claws. Instead of a sceptre, he swayed a long Turkish pipe, wrought with jasmin and amber, which had been presented to a Stadtholder of Holland, at the conclusion of a treaty with one of the petty Barbary powers. In this stately chair would he sit, and this magnificent pipe would he smoke, shaking his right knee with a constant motion, and fixing his eye for hours together upon a little print of Amsterdam, which hung in a black frame against the opposite wall of the council chamber. Nay, it has even been said, that when any deliberation of extraordinary length and intricacy was on the carpet, the renowned Wouter would absolutely shut his eyes for full two hours at a time, that he might not be disturbed by external objects.

Such are the comfortable and thriving effects of a fat government. The province of the New Netherlands, destitute of wealth, possessed a sweet tranquillity that wealth could never purchase. There were neither public commotions, nor private quarrels; neither parties, nor sects, nor schisms; neither persecutions, nor trials, nor punishments; nor were there counselors, attorneys, catchpoles, or hangmen. Every man attended to what little business he was lucky enough to have, or neglected it if he pleased, without asking the opinion of his neighbor. In those days, nobody meddled with concerns above his comprehension, nor thrust his nose into other people's affairs; nor neglected to correct his own conduct, and reform his own character, in his zeal to pull to pieces the characters of others—but in a word, every respectable citizen ate when he was not hungry, drank when he was not thirsty, and went regularly to bed when the sun set, and the fowls went to roost, whether he were sleepy or not; all which tended so remarkably to the

population of the settlement, that I am told every dutiful wife throughout New Amsterdam made a point of enriching her husband with at least one child a year, and very often a brace—this superabundance of good things clearly constituting the true luxury of life, according to the favorite Dutch maxim, that "more than enough constitutes a feast."

The houses of the higher class were generally constructed of wood, excepting the gable end, which was of small black and yellow Dutch bricks, and always faced on the street, as our ancestors, like their descendants, were very much given to outward show, and were noted for putting the best leg foremost. The house was always furnished with abundance of large doors and small windows on every floor; the date of its erection was curiously designated by iron figures on the front; and on the top of the roof was perched a fierce little weathercock, to let the family into the important secret which way the wind blew. These, like the weathercocks on the tops of our steeples, pointed so many different ways, that every man could have a wind to his mind;—the most stanch and loyal citizens, however, always went according to the weathercock on the top of the governor's house, which was certainly the most correct, as he had a trusty servant employed every morning to climb up and set it to the right quarter.

In those good days of simplicity and sunshine, a passion for cleanliness was the leading principle in domestic economy and the universal test of an able housewife—a character which formed the utmost ambition of our unenlightened grandmothers. The front door was never opened except on marriages, funerals, new-year's days, the festival of St. Nicholas, or some such great occasion. It was ornamented with a gorgeous brass knocker, curiously wrought, sometimes in the device of a dog, and sometimes of a lion's head, and was daily burnished with such religious zeal, that it was oft-times worn out by the very precautions taken for its preservation. The whole house was constantly in a state of inundation, under the discipline of mops and brooms and scrubbing brushes; and the good housewives of those days were a kind of amphibious animal, delighting exceedingly to be dabbling in water—insomuch that a historian of the day

gravely tells us that many of his townswomen grew to have webbed fingers like unto a duck; and some of them, he had little doubt, could the matter be examined into, would be found to have the tails of mermaids—but this I look upon to be a mere sport of fancy, or what is worse a wilful misrepresentation.

The grand parlor was the sanctum sanctorum, where the passion for cleaning was indulged without control. In this sacred apartment no one was permitted to enter, excepting the mistress and her confidential maid, who visited it once a week, for the purpose of giving it a thorough cleaning, and putting things to rights—always taking the precaution of leaving their shoes at the door, and entering devoutly in their stocking feet. After scrubbing the floor, sprinkling it with fine white sand, which was curiously stroked into angles, and curves and rhomboids, with a broom,—after washing the windows, rubbing and polishing the furniture, and putting a new bunch of evergreens in the fireplace—the window shutters were again closed to keep out the flies, and the room carefully locked up until the revolution of time brought round the weekly cleaning day.

As to the family they always entered in at the gate, and most generally lived in the kitchen. To have seen a numerous household assembled around the fire, one would have imagined that he was transported back to those happy days of primeval simplicity, which float before our imaginations like golden visions. The fireplaces were of a truly patriarchal magnitude, where the whole family, old and young, master and servant, black and white, nay, even the very cat and dog, enjoyed a community of privilege, and had each a right to a corner. Here the old burgher would sit in perfect silence, puffing his pipe, looking in the fire with half-shut eyes, and thinking of nothing for hours together; the *goede vrouw* on the opposite side would employ herself diligently in spinning yarn or knitting stockings. The young folks would crowd around the hearth, listening with breathless attention to some old crone of a negro, who was the oracle of the family, and who, perched like a raven in a corner of the chimney, would croak forth for a long winter afternoon a string of incredible stories about New

England witches—grisly ghosts, horses without heads—and hairbreadth escapes and bloody encounters among the Indians.

In those happy days a well-regulated family always rose with the dawn, dined at eleven, and went to bed at sundown. Dinner was invariably a private meal, and the fat old burghers showed incontestable symptoms of disapprobation and uneasiness at being surprised by a visit from a neighbor on such occasions. But though our worthy ancestors were singularly averse to giving dinners, yet they kept up the social bands of intimacy by occasional banqueting, called tea parties.

These fashionable parties were generally confined to the higher classes, or noblesse, that is to say, such as kept their own cows, and drove their own wagons. The company commonly assembled at three o'clock, and went away about six, unless it was in winter time, when the fashionable hours were a little earlier, that the ladies might get home before dark. The tea table was crowned with a huge earthen dish, well stored with slices of fat pork, fried brown, cut up into morsels, and swimming in gravy. The company being seated around the genial board, and each furnished with a fork, evinced their dexterity in launching at the fattest pieces in this mighty dish—in much the same manner as sailors harpoon porpoises at sea, or our Indians spear salmons in the lakes. Sometimes the table was graced with immense apple pies, or saucers full of preserved peaches and pears; but it was always sure to boast an enormous dish of balls of sweetened dough, fried in hog's fat, and called doughnuts, or olykoeks—a delicious kind of cake, at present scarce known in this city, excepting in genuine Dutch families.

The tea was served out of a majestic delft teapot, ornamented with paintings of fat little Dutch shepherds and shepherdesses tending pigs—with boats sailing in the air, and houses built in the clouds, and sundry other ingenious Dutch fantasies. The beaux distinguished themselves by their adroitness in replenishing this pot from a huge copper teakettle, which would have made the pigmy macaronies of these degenerate days sweat merely to look at it. To sweeten the beverage, a lump of sugar was laid

beside each cup—and the company alternately nibbled and sipped with great decorum, until an improvement was introduced by a shrewd and economic old lady, which was to suspend a large lump directly over the tea table, by a string from the ceiling, so that it could be swung from mouth to mouth—an ingenious expedient which is still kept up by some families in Albany; but which prevails without exception in Communipaw, Bergen, Flatbush, and all our uncontaminated Dutch villages.

At these primitive tea parties the utmost propriety and dignity of deportment prevailed. No flirting or coquetting—no gambling of old ladies, nor hoyden chattering and romping of young ones—no self-satisfied struttings of wealthy gentlemen, with their brains in their pockets—nor amusing conceits, and monkey advertizements, of smart young gentlemen with no brains at all. On the contrary, the young ladies seated themselves demurely in their rush-bottomed chairs, and knit their own woolen stockings; nor ever opened their lips, excepting to say, yah, Mynheer, or yah, Vrouw, to any question that was asked them; behaving, in all things, like decent, well-educated damsels. As to the gentlemen, each of them tranquilly smoked his pipe, and seemed lost in contemplation of the blue and white tiles with which the fireplaces were decorated; wherein sundry passages of Scripture were piously portrayed—Tobit and his dog figured to great advantage; Haman swung conspicuously on his gibbet; and Jonah appeared most manfully bouncing out of the whale.

The parties broke up without noise and without confusion. They were carried home by their own carriages, that is to say, by the vehicles Nature had provided them, excepting such of the wealthy as could afford to keep a wagon. The gentlemen gallantly attended their fair ones to their respective abodes, and took leave of them with a hearty smack at the door; which, as it was an established piece of etiquette, done in perfect simplicity and honesty of heart, occasioned no scandal at that time, nor should it at the present—if our great-grandfathers approved of the custom, it would argue a great want of reverence in their descendants to say a word against it.

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The Book of STORIES

WHAT THIS STORY TELLS US

WE have already told you in another place about Peter Pan, the boy who wouldn't grow up. Now we come to another play which will also be popular among boys and girls as well as their elders for a long time. This is the Blue Bird, by the famous Belgian writer, Maurice Maeterlinck. In it he tells the story of the search for happiness. The two children go over the world seeking the blue bird, which we find stands for happiness. They find many birds which seem blue in certain lights, but when closely examined are seen to be of some other color. Finally, after enduring many dangers and becoming weary with the search, they return home and find the blue bird there, where it has been all the time. Their eyes were not keen enough to see it until after they had searched far and wide and had tested the friendship of all their companions.

THE BLUE BIRD

ONE Christmas Eve a little boy and girl, named Tyltyl and Mytyl, were sound asleep in their little cots. Their mother had just crept in to tuck them up in bed, and, turning down the lamp, had tiptoed out again. She felt a little sad, because owing to the stormy weather their daddy was not able to go to work in the forest; and she had no money to buy presents for their stockings. Suddenly the children opened their eyes and sat up in bed with a strange feeling that something was about to happen. The light in the lamp flickered faintly, and soft yellow glow poured through the closed shutters of the windows.

"Mytyl, are you asleep?" whispered Tyltyl.

"No, are you?" returned Mytyl.

"No!" retorted Tyltyl with boyish scorn. "How can I be asleep when I'm talking to you?"

For a few moments they whispered together. Then Tyltyl said abruptly: "I have an idea!"

"What?" asked Mytyl eagerly.

"See the light coming through the shutters. The rich children opposite are having a party. Let's get up and look."

"But we mustn't," said Mytyl, taken aback at her big brother's daring.

"Why not?" returned Tyltyl, with a magnificent scorn for consequences.

CONTINUED FROM 5775

Hand in hand, they ran across the room in their bare feet, and pushing back the shutters, looked eagerly out. Sure enough, through the windows of the big house across the street they could see a big Christmas tree laden with presents and children in beautiful frocks dancing about. Suddenly, as Tyltyl and Mytyl knelt on the stool by the window, pressing their noses against the cold pane, a loud knock sounded upon their door.

"What's that?" exclaimed Tyltyl, startled.

As he spoke, the door slowly opened and a little old woman stepped into the room. She was dressed all in green with a big red hood, and she leaned heavily upon a big ebony stick.

"I am the Fairy Berylune," said the little old woman. "Have you here the bird that is blue or the grass that sings? I need the blue bird for my little girl, who is very ill."

There was a moment's silence.

"Tyltyl has a bird," ventured Mytyl timidly.

"Where is the bird?" asked the Fairy.

"Over there in the cage," said Tyltyl.

The Fairy hobbled over to the cage and looked at the bird with her sharp little eyes.

"I don't want it," she said shortly.

an old man and an old woman, and their heads nodded up and down as they dozed.

"It's grandad and granny!" exclaimed Tytyl wonderingly.

"Yes! Yes!" cried little Mytyl, clapping her hands with delight. "So it is! So it is!"

Presently they saw their grandmother slowly open her eyes, stretch herself and look at Grandfather Tyl, who was also waking up.

"I have a notion that our grandchildren are coming to see us to-day," Tytyl and Mytyl heard her say.

The children rushed out from behind the trees.

"Here we are! Grandad! Granny!" they shouted, jumping up and down. "Here we are!"

For a few moments their grandfather and grandmother were so happy to see them that all they could do was to hug and kiss them delightedly.

"Why don't you come oftener to see us?" they asked. "It's months and months now that you've forgotten us, and that we have seen nobody."

"We couldn't," Tytyl explained. "And to-day, it's only because of the Fairy."

"The last time you came," said Granny, "was on All-hallows' E'en, when the church bells were ringing."

"But—" exclaimed Tytyl, much astonished, "we didn't go out that day!"

"No, but you thought of us," answered their grandmother, "and every time you think of us we wake up and see you again."

Presently Mytyl noticed the sleeping bird, and exclaimed, "Why; here is our old blackbird! Does he still sing, Granny?"

As she spoke the bird woke up and began to sing.

"You see," said Granny triumphantly, "as soon as one thinks of him——"

"But the bird's blue, not black!" interrupted Tytyl, in amazement. "He's blue as a blue glass marble. Grandad! Granny! May I have him to take back to the Fairy?"

"Certainly," said they, so Tytyl put him in his cage, and after supper with their grandparents, the children said good-bye.

"Don't cry, Granny dear," said Tytyl, "we will come back as often as we can."

"Come back every day," said their

grandmother wistfully. "It's our only pleasure to have your thoughts visit us."

"Yes, come often," added their grandfather. "We have no other amusements."

So with their precious cage tucked under Tytyl's arm, they set out, waving their handkerchiefs now and then to their dear old grandad and granny. As they walked, the fog closed in about them and hid the cottage from their sight. But a great disappointment awaited them, for when they reached the palace of Light, they found that the bird in the cage was no longer blue. He had turned black. Light smiled when Tytyl told her of his first failure.

"Do not be sad," she said. "Are you not pleased to have seen your grandparents? Is not that enough happiness for one day? Are you not glad, too, to have restored the old blackbird to life?"

Once more they set out in search for the Blue Bird, and this time the Fairy sent them to the Palace of Night, accompanied by Bread, Sugar and the Dog. They wandered on until they came to a wonderful hall lined with gold and ebony and shining black marble. On a great throne in the middle of the hall sat a woman clad in long, trailing, black robes, and in front of the throne sat the Cat. Now the Cat was anxious to prevent the children from finding the Blue Bird, and he had hurried ahead to warn Night that the children were coming. But the Cat was a great hypocrite, and as soon as he saw the children he rushed up to them in pretended delight.

"This way, little master, this way," he purred. "I have told Night you were coming, and she is delighted to see you."

Tytyl explained his errand to the sombre figure on the throne.

"I have come to look for the Blue Bird," he said; "may I have the keys of your doors?"

"Have you the sign?" asked Night grudgingly.

Tytyl touched his hat.

"Behold the Diamond," he said.

Night scowled blackly, but delivered the keys into his hands.

"Look to yourself if you meet with misfortune," said she.

One door after another, around the great black hall, Tytyl unlocked. In one he found the Ghosts, in another the Wars, in another the Shades and Terrors,

and in another the Perfumes of the Night, in still another the Will-o'-the-Wisps and the Fireflies and the Stars. Behind one door he found the Sicknesses, and a little Cold-in-the-Head came hopping out, sneezing, coughing and blowing its nose, but in none could he find the Blue Bird. At last he turned to the great door behind the throne of Night. With warning, outstretched hands she blocked his path.

"Do not open that one," said Night terribly. "If you do you will surely be lost."

Whereupon Mytyl, who had been frightened by all the strange things she had seen, began to cry, and Bread flung himself on his knees before Tytyl.

"Don't do it, master dear," he besought him with chattering teeth.

"You will sacrifice the lives of all of us," mewed the Cat.

"I must open the door," answered Tytyl, rather frightened, but gathering his courage together. "Sugar and Bread, take Mytyl by the hand and run away with her."

So the others fled away as fast as they could, only Tylo, the Dog, half dead with fear, remaining faithfully by his master's side, muttering, "I shall stay, I shall stay! I am not afraid! I shall stay with my little god!"

With trembling fingers Tytyl inserted the key in the great doors. At the first touch they slid softly aside. Tytyl stood staring in utter bewilderment, for instead of the fearful cavern he had expected, a beautiful garden lay before him, shimmering in the moonshine. Flowers that shone like stars bloomed everywhere, waterfalls that came rushing from the sky made music in the air. And then there was something whirling like a blue cloud among the clusters of roses.

"Mytyl, Tylo!" shouted Tytyl, half wild with excitement. "Come all. Help me! Thousands of Blue Birds. Millions! You can catch them by the handfuls."

The children rushed into the dazzling garden and came forth, their arms full of struggling Blue Birds, and hurried away as fast as they could to find the Fairy and tell her the good news. The Cat remained behind.

"Have they got the real Blue Bird?" questioned Night fearfully.

"No . . . I see him there, on that

moonbeam," exulted the Cat. "They could not reach him! He kept too high."

In the meanwhile the children had met the spirit of Light.

"Have you caught the Blue Bird?" asked Light.

"Yes, yes," exclaimed Tytyl eagerly. "As many as we want! Here they are!"

But, as he held out the birds, he suddenly saw that they were dangling limp and lifeless in his hands. He had only caught the moonbeam Blue Birds. The real one had escaped.

Still the children wandered on and on until they received a note from Fairy Berylune telling them to look for the Blue Bird of Happiness at midnight in the Churchyard, so one night when the moon was shining brightly on the grassy mounds and the wooden crosses on the graves, Tytyl and Mytyl crept into the churchyard. Mytyl was frightened.

"I want to go away," she pleaded.

"Not now, little sister," said Tytyl, mustering his failing courage. "I am going to turn the diamond and we'll see the souls of the dead."

"No! No!—Don't," gasped Mytyl. "I am so frightened, brother!"

"There's no danger," Tytyl reassured her.

"I—I don't want to see the dead," persisted Mytyl. "I don't want to see them."

"Very well, you sha'n't see them. Shut your eyes," returned Tytyl, and he put up his hand to turn his cap. For a moment he too felt like closing his eyes. There was a pause of terrifying silence. Then, slowly, the crosses began to totter, the mounds opened.

"They're coming out," gasped Mytyl, cowering against Tytyl.

Slowly, slowly, the slabs rose up,—a tiny mist came from the ground. Then little by little green shoots pushed their heads through the sod, and a great full-blown rose spread on every grave. Mytyl opened her eyes and stared with dazzled eyes at their wonderful golden hearts.

"Where—where are the dead?" she whispered, trembling.

"There are no dead," exclaimed Tytyl, awestruck.

But the Blue Bird was not in the Churchyard. The children next sought the Blue Bird in the Kingdom of the Future. On and on they went until they

came to the blue Halls of the Azure Palace, where they found the children who were waiting to be born, hundreds of thousands of them—all dressed in long blue, mist-like garments. Some were playing, others strolling to and fro, others talking or dreaming; many were asleep; many were working at future inventions; and everything about was blue, blue as the summer sky.

"Where are we?" asked Tytyl.

"In the Kingdom of the Future," Light told them. "We shall probably find the Blue Bird here."

As Light spoke a crowd of little Blue Children began to gather about, their fingers in their mouths, their eyes wide as saucers.

"Live children! Come look at the little live children," they cried.

They brought all their inventions for the children to see.

"Look at my daisies," cried one, bending under the weight of a flower as big as a cartwheel. "They will grow like that when I am on earth."

"See my pears!" said another. "They will all be like that when I am thirty!"

One little child ran up and began to kiss Tytyl and Mytyl.

"I shall be your brother," the child said. "I am coming to you next Palm Sunday."

"What have you got in that bag?" asked Tytyl curiously.

"I bring three illnesses," the child replied. "Whooping cough, scarlatina, measles."

"And after that?" queried Tytyl.

"After that . . . I shall leave you."

"But it will hardly be worth while coming," exclaimed Tytyl.

"We can't pick and choose," the little unborn soul replied.

Suddenly a loud swelling sound was heard through the Azure Hall. Two great opal doors on one side began to move.

"What is that?" asked Tytyl.

"That's Time," replied the Child.

The great opal doors turned slowly on their hinges, and old Father Time appeared on the threshold. Behind him could be seen a boat, sails set ready for the sailing.

"Are they ready, whose hour has now struck?" he called out very gruffly.

The Blue Children came hurrying, crowding from every side.

"Here we are! Here we are!" they shrilled.

"One at a time," said Father Time, as he hurried those who were to be born into the boat.

Light threw her gold cloak around Tytyl and Mytyl, and dragged them to a corner of the hall from where they could see everything without being seen by anyone.

As the boat set sail, the little Blue souls called out their farewells to the children who were going to be born.

"Good-bye, Pierre! Good-bye, Jean. . . . Try to know me again. . . . I shall find you. . . . Don't lose your ideas. . . . Don't lean too far into space."

Then the children's voices in the boat were heard faintly in the distance: "The Earth! The Earth! How beautiful it is!" Then a strange, wonderful swelling sound of gladness arose.

"What is that?" whispered Tytyl.

"It is the song of the mothers coming out to meet them," said Light.

Meanwhile Time had come back to close the opal doors. Suddenly he caught sight of the children, and he advanced upon them furiously.

"Hurry!" said Light. "Hurry! Take the Blue Bird, Tytyl, and go in front." She put into his arms a gorgeous Blue Bird. Just as they were crossing the threshold of the palace, Time with a roar of rage darted his scythe at Tytyl. The boy, who was very much taken by surprise, opened his arms and the Bird soared away.

And thus it came to pass that the children could not find the Blue Bird of Happiness. Everywhere they looked for him, but nowhere could he be found. At last one day they woke up to find themselves back in their own little beds at home in the cottage, and there in their own home they found the Blue Bird of Happiness for which they had spent their time searching everywhere else in vain.

And this is just the case with most of us—we are on the look-out for happiness everywhere, in all the out-of-the-way places possible, when, if we did but know it, it is waiting for us in all the simple joys and duties of our own homes.

CONTINUED ON PAGE 5907.

The Book of ALL COUNTRIES



THE MAGNIFICENT PANORAMA OF THE ALPS AS SEEN FROM MÜRREN

AMONG THE SNOW-CAPPED ALPS A FAMILY TOUR IN SWITZERLAND

OUR first united Swiss holiday was long under discussion. For months, maps and guide-books have been pored over with a view to making schemes of tours, and the chief topics of thought and conversation have been the heaviness and fit of our boots, the lightness of our waterproofs and luggage, the suitability of various sorts of hats to stand rain and wind, as well as shade the eyes from too much sun. Other preparations have been extra vigor in our regular Swedish exercises and deep breathings, a handful of salt in our baths, and steady walking on every possible opportunity, especially up hills. At last we are off, all very fit and everything complete.

We are a merry party at breakfast our first morning at Berne, in spite of a stormy Atlantic crossing and a long night journey across the plains of France. Our spirits begin to revive when the wide, sad plains—so inexpressibly lovely in the misty grey dawn—give way to the uplifting hills of the Jura country which usher us into Switzerland. As we watch the hastening rivers and the fleeting woods and valleys—foretastes of delights to come—we feel that the real starting-point of our long-talked-of, long-prepared-for tour is at hand.

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After breakfast we find a shop where we can buy iron-pointed walking-sticks and the brown waterproof knapsacks with pockets, that fit so comfortably to the shoulders with straps. This done, we long more than ever to be off, but Berne holds us. How interesting are the old towers, the ancient clock with its curious mechanical contrivances, the shop arcades, the beautiful fountains, the famous bears in their pit, eating oranges so neatly, bathing in their pond with absurd antics!

The sun is shining, and we have no eyes for anything but the views from the promenades, from the high bridge across the swiftly flowing Aar, from the grand terrace on which the great church stands boldly out over a hundred feet above the river, from the Schänzli, a hill close by, where we have our first out-of-door meal.

But the view! It is our first sight of the distant glittering white mountains, of which we have so often read. They seem to us, as we gaze, a sort of link between earth and heaven, rising from the lower hills to mingle with the clouds of the sky above. A mighty company of giants they look, these chief peaks of the Bernese Oberland, or Highland, and as we sit on, making out the Jungfrau.

and her neighbors, and other groups, unable to tear ourselves away, a beautiful rosy flush spreads over their unearthly whiteness ; it is the sun's good-night kiss. And then we begin to feel tired, and gladly take the tram home to supper and to our delightfully comfortable Swiss beds.

ON THE BEAUTIFUL LAKE OF THUN

Eager as we are to be off in the morning, we feel that we must wait a few hours to go to the Natural History Museum to see the relief map of the Bernese Oberland and compare it with our flat ones, tracing

new beauties are unveiled at every turn as we seem to pass almost under their shadow.

At Spiez we cross the lake, and then all too soon comes the little pier at which we are to land, and from which a mountain railway takes us up a very steep mile. Every moment the view becomes grander and grander. Somehow, we think of Jack climbing the beanstalk and the wonderful country he found at the top as we leave the station and start our walk along the road cut out of the Beatenberg Slopes.

There are woods rising on the left,



THIS PICTURE MAP SHOWS THE ROUTE OF THE HOLIDAY IN SWITZERLAND

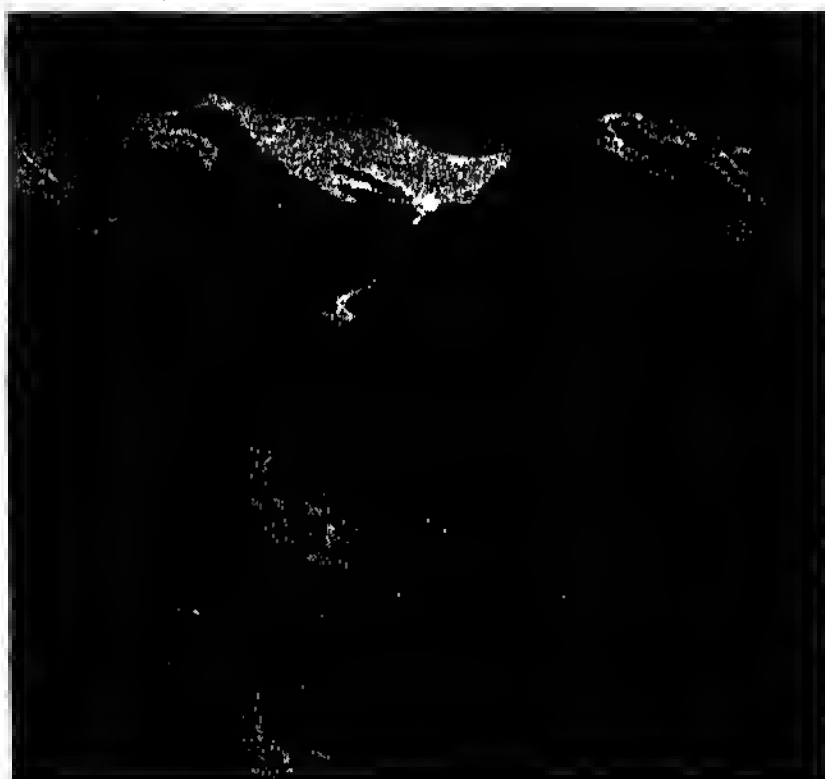
on it the valleys and passes we have planned to see, for we mean to go on foot as much as possible. We take, too, a hurried glance at the beautiful crystals from St. Gothard, and at the animals of Switzerland, past and present. And then, having sent on in advance all the baggage we cannot carry, we shoulder our knapsacks packed with necessities for the night and rush for the train to Thun. All the time we are in the train the wonderful mountains come closer and closer, and when we take the steamer on Lake Thun

woods and fields sinking downwards to the lake on the right. The long village of St. Beatenberg straggles along this road for two or three miles, with large hotels, and little shops full of carved bears and other Swiss articles. On and on we go, past the last big hotel, and then up a bit more hill, till we are nearly a thousand feet higher than the village, and have arrived at Amisbühl.

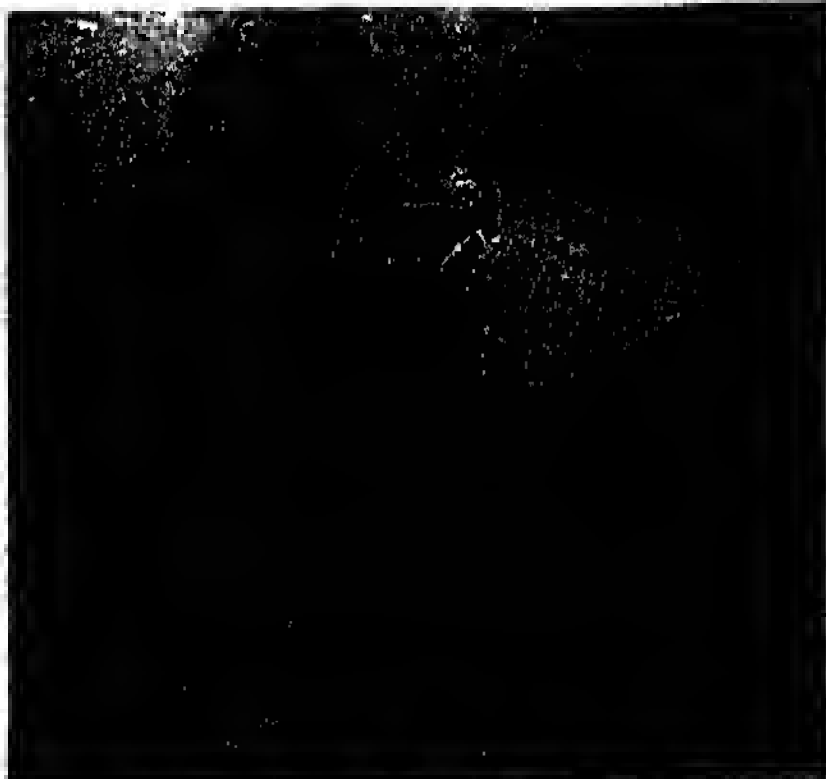
A SWISS MOUNTAIN VILLAGE

All our lives we can never forget our

THE GLORY OF THE ALPINE HEIGHTS



GRINDELWALD VALLEY AND THE WETTERHORN (2)



GOATS ON THE ALPINE SUMMITS



(1) CLIMBING A DIFFICULT PEAK



(2) CROSSING A DEEP CREVASSE



(1) A CRAGGY ROAD OVER THE RIVER AAR



(2) ROAD THROUGH THE ROCK NEAR LUCERNE

These pictures give some idea of the grandeur and variety of the Alpine scenery. The glory of the snowy peaks, the indescribable beauty of the fertile valleys as seen from the lofty heights, the paths and roads over and under and through the solid rocks, are sights never to be forgotten by the traveler who has once seen them.

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week at Amisbühl. From the deep verandah, where we can have all our meals if we like, we look right across Interlaken—the town “between the lakes” of Thun and Brienz—to the glorious mountains that have seemed to call us on all the way from Berne. We can study them from our grand point of view at every hour of the day, in all sorts of weather, and find them always changing in color and beauty. With the telescope we can see climbers like black specks, and many details of the rocks, snow, and ice that make up a snow landscape.

A THUNDER-STORM IN THE MOUNTAINS

The grandeur of it all in a great storm of thunder and lightning makes us breathless. Never have we heard such thunder as this. It crashes and rolls and mutters, and its echoes are tossed back and forth from mountain to mountain. Never has lightning revealed to us such desolation for such brilliant moments! And sometimes, when the mists cover the lake and the town far below, and the valley beyond, we wonder if they can really be there, for we can see nothing below the billowing grey sea. Then, while we are still bewildered, the scene suddenly changes. All below lies in golden sunshine and bright color, and the mists have rolled up and entirely hidden the many mountain-tops.

We get into the habit of waking early to watch from our windows the glories of the sunrise. Each day of our stay we take beautiful walks up the hills, and soon succeed in climbing up the slippery grass slopes, for we have nails in our boots, to see over the ridge

to the next valley beyond. Charming white goats come and play with us, and share the salt we have to eat with our hard-boiled eggs; and we get milk in the chalets of the high pastures on which the beautiful brown cows wander, the loud

bells fastened round their necks jangling at every step. All too soon the day comes for us to leave. We send our bags on to Mürren, and in the morning we again shoulder our knapsacks and find our way past the haymakers—they always seem to be making hay in Switzerland—and the barns, and the chalets, down and down through the woods for three thousand feet to the lake, and Interlaken—the town between the lakes.

Some of us would fain linger in the town, for the shops are most tempting; but we push on by train up the valley we have looked at so often from Amisbühl, to Lauterbrunnen, mounting all the time, and enjoying the sight of the hurrying, foaming river beside which the railway line climbs up the mountain

side, and the ever-changing views of the snow giants, who now seem close upon us. We might take the cable railway and the electric railway up to Mürren, but we decide to make the climb, which we thoroughly enjoy. Part of the way is hot and shadeless, but farther up there are little leaping rivers to cross, besides all the delights of

shady, mossy paths, and wild strawberries.

LIFE ON A MOUNTAIN PLATEAU

When we emerge, somewhat tired and heated, on the plateau on which Mürren stands, we feel overwhelmed by the



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ON THE LAKE OF LUCERNE
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nearness and immensity of the mountains, divided from us by a narrow, deep valley. What a glow there is upon them this evening! Everyone rushes out from dinner to enjoy the sight for the few minutes that it lasts. And from our window we see the goats come down the lane from the mountains to sleep in the village; we hear their bells in the morning when they start, soon after the glorious sunrise. We spend some days at Mürren, two as wet as wet can be, no view, no fires, no little girls and their mothers at every corner making laee for tourists to buy; but we read up our route, write our letters, and on fine days enjoy our walks all the more for a rest. Such walks! Each day we think we have found a more beautiful one than the last. But the unforgettable one is to the Schilthorn, our first big climb. We go on, up and up, till we come to a dreary valley, all rocks and snow. The sun has melted the snow, and as we cross it we sink in over our boots; but we are well repaid when we come upon a field one blaze of blue, dark blue gentian, pale blue forget-me-nots, and below it a blue, blue lake, and above, over all, the bluest of skies. We have a fine seramble back, tobogganning part of the way, and much enjoy crossing a wide and dashing river on stepping-stones.

THE BEAUTY OF WOODS AND WATERFALLS

Then comes another glorious walk. Leaving Mürren early in the morning, packs on back, baggage sent on to Nieder Rickenbach, we take the road

for four or five days. We quickly find our way past Gimmelwald, down and down to the head of the Lauterbrunnen valley, and all day long we realize to the full the meaning of its name—nothing but springs. Torrents rush

down the steep sides in great leaps, or fall sheer over hundreds of feet; rainbows glitter on the thin veil of mist made by smaller falls, and the path through the woods is ever twisting and turning as if to disclose new beauties at different points.

Presently we find ourselves at the foot of a high cliff, and, lo! there is one of the hotels at Mürren perched on the very top of the height; on the other

hand are the steep slopes leading to the Jungfrau mass. Climbing a little way up this slope, we come to the Tummelbaeh Falls, where the water rushes magnificently through rocky chasms in the heart of the mountain. We

stand peeping into these chasms, sheltered from the spray by umbrellas provided by little boys on the spot, and then see the mass of water shoot out in one wild bolt into mid-air, to fall in a rushing stream below. And then, as we pursue our way down the valley, we fall in with a delightful Swiss schoolmaster, who tells us of the school he taught in in New York, and of the interest of Zurich, where he

lives, till we wish our tour could take that in too. We are astonished at his powers of walking, and have at last regretfully to say good-bye, and see him swing on towards Interlaken, while we must stop at Lauterbrunnen, at the point in the valley where we started



SWISS PEASANTS AT BREAKFAST

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THE UPPER GLACIER AT GRINDELWALD

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our climb up to Mürren. A bigger climb is now in store for us, up the Wengern Alp and up to the top of the pass of the Little Scheidegg, but we decide to do it by the railway, which winds upwards through meadows and pine-woods, over bridges, and through tunnels.

The views become grander and wider as we go up and up, over the Lauterbrunnen valley by which we have come, and to Mürren and the mountains behind. And then we feel quite bewildered by the overwhelming nearness of the glaciers, and the

immense and dazzling snow mountains, now only two or three miles away. We have begun to be familiar with the forms of many others beside the Jungfrau, the Monk, the Eiger, the Silverhorn. We watch the wonderful train with powerful engines as it appears and disappears on its way through tunnels in the Monk, Eiger, and Jungfrau until it reaches far up the Jungfrau. We spend the rest of the day exploring the various points of view, and feel so unwilling to leave

this wonderful ridge, whence our onward route can be seen through Grindelwald to the Great Scheidegg beyond, that we stay another day and night on the top, climbing the Lauberhorn, and spending hours drinking in the wild beauty of the entire chain of this Bernese Oberland, which we first saw so distant and ghost-like from Berne.

A VISIT TO THE GLACIER AND THE ICE GROTTO

We feel as if we had descended to another world next day when we pass through noisy Grindelwald, with its crowds of tourists and vehicles, shops and

hotels, so we push on towards the beautiful three-peaked Wetterhorn, and spend the night in an hotel an hour or so beyond Grindelwald, near the Upper Grindelwald glacier. We visit the Ice Grotto cut out in the thickness of the ice, and find great interest in the blueness of the cracks, and the débris brought down by the ice river and dropped where it thaws, and we cannot resist a trip in the wonderful train by which we mount high in air, as in a lift, and look far over the sea of ice, with its frozen

waves and the smiling valley, which forms such a contrast with its beautiful pastures, shut in by bare peaks and dazzling snow. And then, after vainly trying to make friends with a splendid St. Bernard mother and her puppies, we set our face for the pass of the Great Scheidegg, up and up—enjoying the bluebells and the heather, and the little leaping rills, and the colors of the rocks and the sky—and thankful indeed are we for coffee at the inn on the top of the pass, whence we get a

farewell view of the giants who have made our lives seem fuller and wider, and the world a nobler home than we have ever realized before.

The descent by the lovely path overshadowed by the Wetterhorn and his companions is quite easy. Now and then we hear the thunder of a falling avalanche and see the light snowflakes dispersing like a white cascade.

We get beds at a sawmill when night overtakes us, and next morning, avoiding Meiringen, we find our way past the Reichenbach Falls through the amazing gorge of the Aar to Innertkirchen.



THE VILLAGE OF GRINDELWALD

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A good night's rest prepares us for the long ascent of the monotonous Genthäl next day. Next morning the mist clears away as we pass the beautiful Engstlen Lake, and the majestic Titlis Mountain comes well into view as the summit of the Joch Pass is reached and we thereafter begin to descend the steep paths towards Engelberg. We rest for the night at the Hotel Hess, where climbers often stay before starting for the top of Titlis. We much wish that we could see the view from there, for it takes in all the Alpine mountains from Savoy to the Tyrol, and away to North Switzerland and South Germany.

We give but a passing look at Engelberg in its green valley and at the huge abbey, and then take the train down to the valley so famous in Swiss history, leading past Stanz to Lake Lucerne. But our stopping-place is Dallenwil,

a little roadside station, from which we mount by a bridle-path for three hours through woods and pastures to Nieder Rickenbach. There is no road for carriages, so the only way to get there, if one's feet are not strong enough, is on mule-back—or to be carried in a chair, like a sedan chair, by two men. The luggage, the food, the furniture, everything has to be thus carried up. We are glad to see our baggage awaiting us, and to settle down for a week to explore the beautiful neighborhood and enjoy the delightful quiet and comfort of the hotel, and the views in every direction. All too soon the day comes when we must start again. We send the baggage to Gersau, on Lake Lucerne, and, with knapsacks once more buckled

on, we climb the hill behind Nieder Rickenbach, and from the top look down to the great blue lake below, and to others glittering in the distance; to the



A YOUNG GOATHERD

Rigi and Pilatus—grand heights, though not snow giants. And then we drop down and down to the lake where we take a steamer across to Gersau, our headquarters for the rest of our holiday. We take many little trips by the steamers, and then climb to spots famous for their views. Our longest and last trip is to the very end of the lake, and then by train to Goeschenen, by the railway so wonderfully engineered, rising by circular loops and tunnels to the levels re-

quired. As we have always longed to go in a real Swiss coach, which looks like three carriages built into one, we take the Ober-Alp coach from Goeschenen. We get a glance into the black mouth of the tunnel that pierces the heart of



A MOUNTAINEER WITH A CAPTURED EAGLET

the great central mountain mass of St. Gothard, rumble over the Teufels Bridge, and past the interesting fortifications which guard the passes. We meet the soldiers returning from their practice in carrying guns in pieces on mule-back up the steep hills—all for defence, not attack. And the coach with its five horses rattles on past Andermatt, then up and up by zigzag roads, backwards and forwards dozens of times. The view as we look back becomes more and more magnificent,

and at last the lake at the top of the Ober-Alp Pass is reached. Then we scramble down, rather stiff, to stay the night at the little hotel. The horses now have a descent as steep and long as the ascent we have just made, to the lovely

Val Tavetsch, through which the infant Rhine starts on his long journey to the distant North Sea. It is to see his very beginning, for we are Rhine lovers, that we have come to the Ober-Alp; so the disappointment is great next morning when we find it raining hard. However, we decide to try, and we do a stiff bit of climbing to within five minutes of the little Toma See, or lake, called the "source of the Rhine." Then suddenly there sweeps down upon us a thick mist, which wraps us round with cold, wet arms and blots out even the rocks and trees that are nearest. So there is nothing for it but to beat a hasty retreat, walking as carefully as we can. We dry ourselves at the hotel, and take the coach back to Goeschenen and thence back to Gersau, to find the lake a mass of glittering purple and gold under a stormy sunset. Two pouring wet days help us to feel less unwilling than we were to leave the beautiful holiday country, already withdrawn from our eyes under a mantle of grey mist; and so we start in the steamer from Gersau to Lucerne. For, in any case, we could not leave



(2) A VILLAGE STREET

on the lake, the pleasant bustle, the rushing green torrent of the Reuss as it pours out of the placid lake. The old bridges with roofs interest us much, also many beautiful old houses, with their signs hanging out, as was the custom in the Middle Ages.



(1) THE VILLAGE FOUNTAIN

We see, too, the famous dying lion hewn out of the rock, his paw sheltering the lilies of France; and we recall the tragic story and the bravery of the Swiss Guards who defended the Tuileries to the death. Some of us would like to linger long among the tempting shops—for presents to take home in the shape of silver jewelry, painted ivory flowers, and the ever-charming carvings made by our little brown friends at Berne. But, as usual, there is a view that must be seen. Electric and cable tramways take us quickly to the Sonnenberg, a height behind Lucerne, where we spend a lovely afternoon



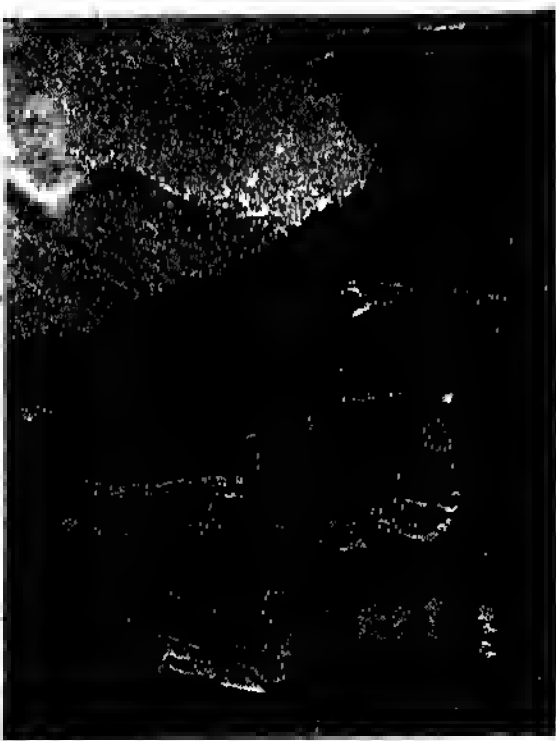
(1) A SWISS REAPER

help us to feel less unwilling than we were to leave the beautiful holiday country, already withdrawn from our eyes under a mantle of grey mist; and so we start in the steamer from Gersau to Lucerne. For, in any case, we could not leave without at least a glance at Lucerne. Fortunately, by next morning, the weather clears, and we can walk on the quays under the chestnuts, and enjoy the views



A GIANT ALPINE HORN

cable tramways take us quickly to the Sonnenberg, a height behind Lucerne, where we spend a lovely afternoon



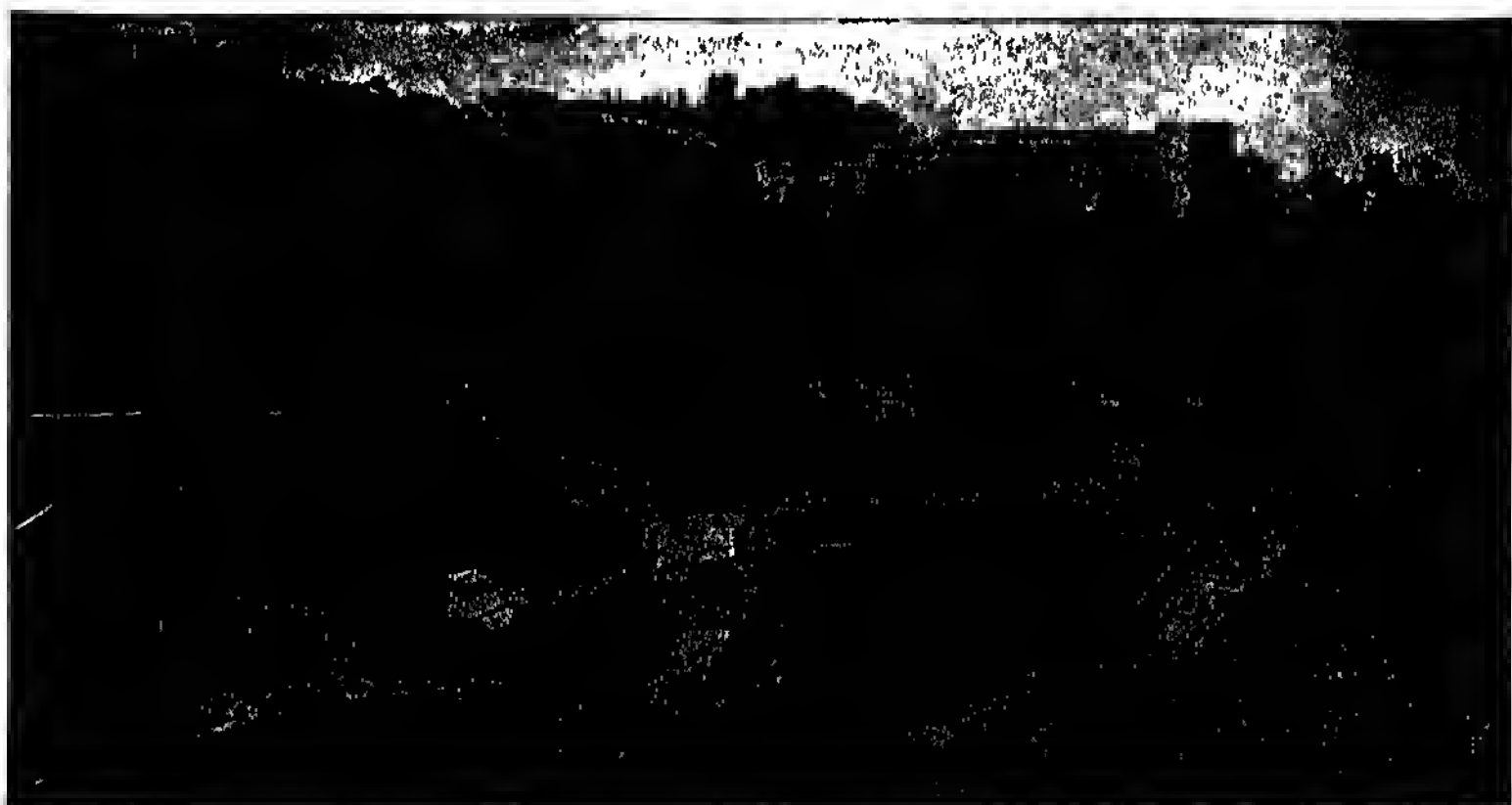
(2) A LITTLE LACE-MAKER

saying good-bye to the lakes and mountains which we have learnt to love so well. Then comes the final start, from Lucerne, for London, and as we go we make plans for another year—plans for seeing the Holbeindraw-

ings at Basel and the old houses at Lucerne, for continuing the journey in the Ober Alp coach, and perhaps for trying again to see the source of the Rhine.

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CONTINUED ON PAGE 5925.

The Book of MEN & WOMEN



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THE ALHAMBRA, SPAIN

THE GLOOMY KING OF SPAIN

NO more unhappy man ever sat on a European throne than Philip II. of Spain, the son of the emperor Charles V. Philip began his life with high hopes and great ambitions, but before he died all his hopes were broken, and his ambitions lay in ruin. When he began to reign, he had such revenues as no monarch before him had ever had; his armies were composed of the pick of the world's soldiers, led by brilliant generals, and he had a splendid navy. He lived to see his kingdom heavily burdened by taxation, his armies defeated, and his great navy utterly destroyed.

He was naturally cold and proud. His education helped to increase these defects, and he grew up to be gloomy, suspicious, and intolerant, and consequently he led a very sad and lonely life. Though he never said, "I am the state," he believed that he was. He believed that a king could do no wrong, and that he had the right to compel all his subjects to think as he did. Moreover, his father taught him to distrust even his own counselors, and he therefore followed his own judg-

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ment, when perhaps the counsels of others might have guided him into happier courses. He thought it was necessary for the well-being of a state that all the people should worship God in the same way, and that his way. Though he was perhaps not really cruel, these beliefs led him into acts of cruel intolerance, and wars of bitter persecution, which left a stain on his good name, and brought about the impoverishment of his country.

When he was a young man, he married his cousin, Princess Mary of Portugal, but his wife died when their little son was only a tiny baby. After a time, to please his father, he married another cousin, Queen Mary of England, though he did not love her. He and his father hoped that this marriage would bring England under the dominion of Spain, but their hopes were not fulfilled. The English people disliked his cold, haughty ways, and though they did not love the queen, they resented his neglect of her. Though some historians say he was not to blame, the people believed that Mary's religious persecutions were partly due to his

JULIUS CAESAR

HERBERT SPENCER

influence. When Calais was lost in the war with France, into which Mary plunged England at his persuasion, their dislike grew to bitter enmity.

In 1555, the emperor decided to give up all his power and go into a monastery. His brother Ferdinand, as we have read in another part of the book, was made emperor, but Philip succeeded to the kingdom of Spain, to Sicily, Naples, and the duchy of Milan in Italy, to the duchy of Burgundy, which included Holland, Belgium, and Franche Comte, and to the rich Spanish possessions in the New World and the East Indies. It was a magnificent heritage, but Spain was then very powerful, and if Philip had been a great man, he might have founded a greater empire than the world has ever seen.

PHILIP'S WAR WITH THE NETHERLANDS

It is said that when Charles presented Philip to the Estates of the Netherlands as their king, and said farewell, they wept. They soon found that they had cause for their tears. Large numbers of the people had embraced the doctrines of the Reformation, and Philip tried to turn them back to their old faith, but they refused to obey. He then sent a large army to enforce his wishes, and began the persecution of which we read in the story of Belgium and Holland.

Queen Mary of England died a few years after her marriage to Philip, and as they had no children, she was succeeded by Queen Elizabeth. Philip still tried to keep his influence over England, but failed. He would have married Elizabeth if he could, but even if she had been willing, she knew that a marriage with him would probably rouse the people to rebellion. After that he married a French princess, Elizabeth of Valois, whose son succeeded him.

THE DESTRUCTION OF THE ARMADA

The persecution in the Netherlands greatly added to the enmity of the English people, and they became Philip's most dangerous foes. English ships

began to prey on the Spanish-American colonies, and on Spanish commerce with the West. Many a good ship laden with gold and silver from the Spanish Main never saw her home port again. Philip tried to retaliate by giving his support to plots to put Mary Queen of Scots on the throne of England, but he did not succeed. Mary was executed, and Elizabeth sent troops to aid the Netherlands against him. He had already claimed the kingdom of Portugal through his mother, and had conquered that country. Now he determined to do the same with England. He said he had a better right to the throne than Elizabeth, because he was descended from John of Gaunt. With the combined fleets of Spain and Portugal, he prepared a great Armada to invade England and enforce his claim. But the Armada was defeated, and, as they fled from the English fleet, his ships were smashed on the rocky coasts of Scotland and Ireland.



THE ESCORIAL PALACE, NEAR MADRID

THE VICTORY OVER THE TURKS AT LEPANTO

One really bright spot in Philip's reign was the great victory over the Turks at Lepanto, of which we read in another place, but on the whole it is a dreary story of mismanagement, for

which he was himself almost entirely to blame.

THE BUILDING OF THE FAMOUS ESCORIAL

In Spain, Philip's great and lasting monument is the Escorial, a great building about twenty-five miles from Madrid, which was erected to be a palace, a monastery, and a tomb all in one. Charles V. had urged upon his son to provide a suitable resting-place for his remains, and when Philip won the great battle of St. Quentin against the French in 1557 he vowed to erect a great monastery and palace where his father's bones should rest, and to dedicate it to St. Lawrence.

The Escorial was designed in the form of a gridiron, because St. Lawrence is said to have perished by martyrdom upon a gridiron. The plan is certainly the strangest of any great building in the

THE GLOOMY KING OF SPAIN

world, and we cannot say that it is beautiful. Fabulous wealth was expended upon it, and it was not without reason that the Escorial was called in Spain "the eighth wonder of the world." For thirty years Philip devoted most of his spare time to visiting the mountains north-west of Madrid, where, 2,700 feet above the sea, he had selected an almost inaccessible site for his monastery-palace. There he would sit or stand and watch the great palace gradually rising, as thousands of workmen built up the massive walls. In order to judge the effect from a distance, Philip would climb to a rocky

Upon the decoration of the Escorial, and in pictures for its walls, Philip spent an enormous amount of money. He employed Titian and all the most famous Italian artists of the day, and some of their most brilliant works were the results of Philip's patronage. He was a gifted art critic himself, and was most exacting in his requirements, so that some of the artists had to do their work over and over again before they could satisfy the king. One of them, Zuccaro, who had been greatly overrated, failed to satisfy him at all, and he was dismissed and sent back to his own country. But Philip



PHILIP II. SEATED ON THE ROCK FROM WHICH HE WATCHED THE BUILDING OF THE ESCORIAL crag a mile or more from the building, and in a kind of natural chair formed by the granite-like rock, which ever since has been known as "the king's seat," he would sit for hours, with a spy-glass, gazing upon the wonderful palace that was being erected.

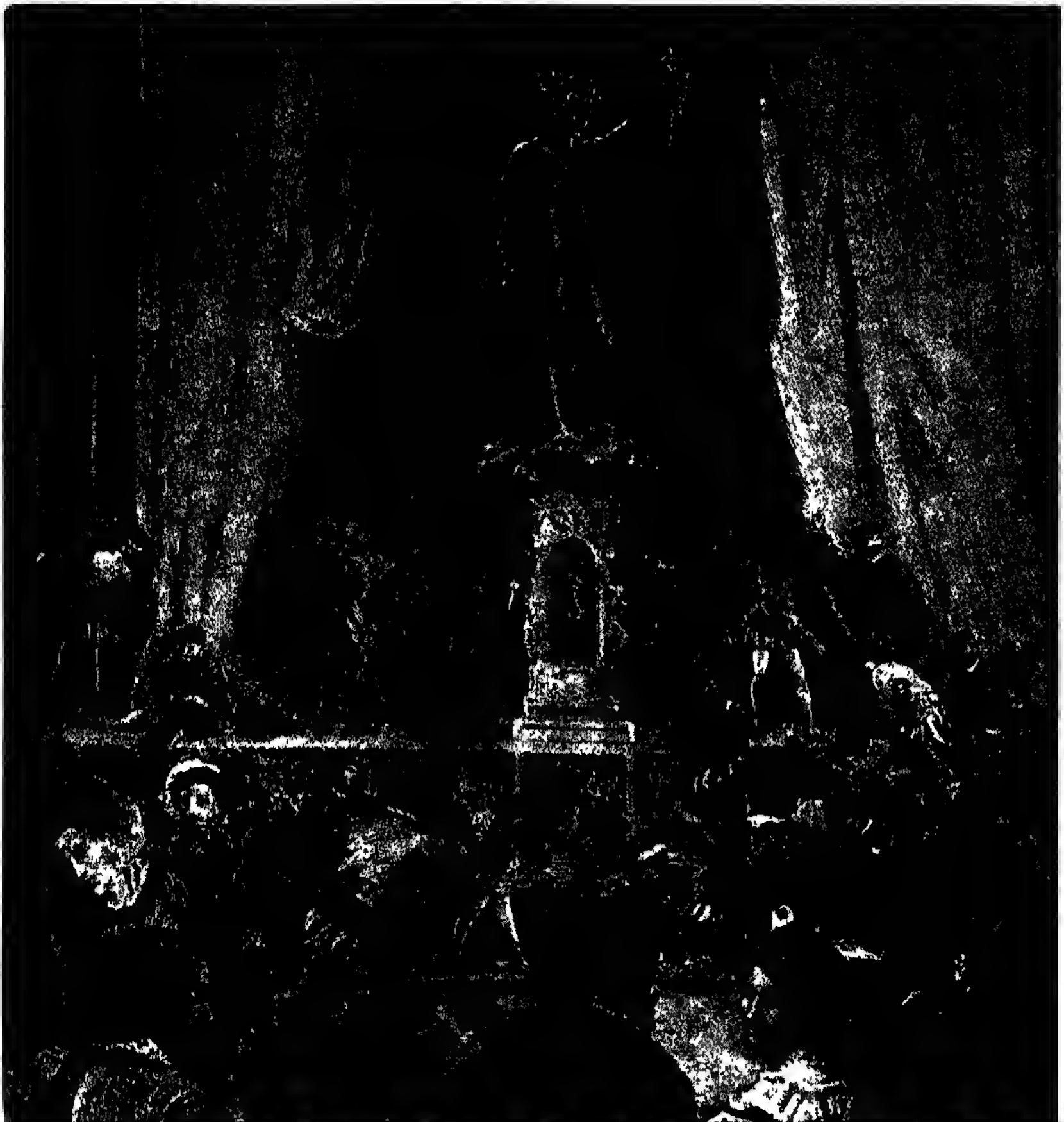
To this spot the monarch used to repair, taking with him his secretaries and his papers, and from there he kept up a correspondence with the different parts of his great empire. A writer of that period tells us that he did four times the amount of work there that he did in the same number of days in his capital. Philip himself used to boast that, thus hidden from the world, with a little bit of paper, he ruled over both hemispheres.

always treated his artists generously with money, and when this unlucky painter was sent away he was paid a large sum, in addition to a handsome salary for the full length of time for which he had been engaged.

"It is not Zuccaro's fault," said Philip; "it is the fault of the persons who brought him here." The king would sit for hours watching the artists at work, offering occasional criticisms and talking familiarly with them. In fact, it has been said that in the presence of this great building Philip's nature appeared to expand.

When the palace was far advanced, after the building operations had been going on for fourteen years, it was one night struck by lightning, and a fire broke

ARTIST OF FLORENCE AND DEFENDER OF ROME



When Cellini unveiled his Perseus, the people rushed to see it and vied with one another in its praise.



Cellini defending the Castle of St. Angelo during the sack of Rome in 1527 by the French.

out that came near to destroying it. Philip watched the fire with great anxiety, but at last it was subdued. The building was completed twenty-one years after the foundation-stone was laid.

The Escorial has lost its ancient glory—if such a gloomy place could be said to have a glory—and is no longer inhabited, except as a monastery and school.

When it was finished the Escorial was more than half a mile round, and had no fewer than sixty-eight fountains playing in its halls and courts. It has twelve thousand windows and doors, and the keys of the doors weighed more than half a ton. Philip died in the Escorial palace in 1598, and his remains lie buried there.

THE LIFE OF BENVENUTO CELLINI

CLEVER men are not always great men, and we must not be disappointed to find that Benvenuto Cellini, the famous sculptor, goldsmith, and engraver, who lived in the time of Charles V. and Philip II., has to be added to the list of talented men, who did not live good lives. He was an extraordinary man—at the same time extraordinarily clever and extraordinarily wicked.

Cellini was born in the year 1500, in Florence, when that city republic was still a great centre of art and learning. His father, Giovanni Cellini, who was a maker of instruments and a flute player, wished Benvenuto to be a musician and had him taught music. Benvenuto, however, loved drawing and metal work, and when he was fifteen, persuaded his father to let him become a goldsmith. He went to a man named Antonio Marcone to learn his craft, but his apprenticeship did not last long. He and his younger brother were quarrelsome youths, and when he was only sixteen, the magistrates banished them because his brother had wounded a companion in a street fight.

He was back in Florence in six months, and was sent to Bologna. There he worked for a year, and then went home, but soon ran away to Pisa, because his good father had offended him. At the end of a year he went home again, but before long ran away to Rome because of another dispute with his father. In two years, however, he returned to Florence, but was again obliged to leave to escape punishment for a quarrel, and went back to Rome.

CELLINI ENTERS THE SERVICE OF THE POPE

By this time he had reached manhood, and, though he was still young, he was already known as an almost unrivaled master of his craft. A beautiful silver vase, which he made for the Bishop of

Salamanca, brought him to the attention of Pope Clement VII., who gave him many commissions. The favor of the Pope, together with the beauty of his work, brought him plenty of employment, and he became prosperous, and was able to send help to his father. He lived in Rome for a number of years, and his life there, as elsewhere, was full of adventure. He had a furious temper, over which he held no control, and he thought little of fighting with, and wounding, or killing anyone who offended him. At one time, his behavior was so bad that the Pope ordered one of his officers to go and hang him on the spot, and not to appear at the Vatican again until he had done so, but the storm blew over, and he was taken into favor again.

In 1527, Rome fell into the hands of a French army, and even the castle of St. Angelo, in which the Pope had taken refuge, was in danger of being taken. Cellini took part in the defence of the city and castle. He said that he killed the Constable of France, and wounded the prince of Orange, and claimed that but for him the castle would have fallen. All this may not be quite true, but he was a good soldier, and there is no doubt that he fought bravely.

After the siege was over, he went to Florence to see his father. From Florence, he went to Mantua for a time, and then returned to Florence, but war broke out between the Pope and Florence and, as his father had died, Cellini returned to Rome.

HIS IMPRISONMENT IN THE CASTLE OF ST. ANGELO

Some time after this, Pope Clement VII. died, and was succeeded by Pope Paul II., who also held Cellini's work in high esteem. But Cellini had a powerful enemy who, in 1537, had him imprisoned on a charge of theft. He escaped from the castle of St. Angelo, but was re-

captured, and was put into a horrible dungeon where he was kept for some time in constant fear of death.

After a time he was released, and then he left Rome and went to Paris, where he was received with great honor. The king, to whom he had already paid a visit, gave him many commissions for which he was well paid, and a castle in Paris to live in. But in 1545, when he was at the height of his powers and his fame, he left France and went back to his native city. He had some difficulty in leaving the country, for he was accused of carrying off some of the king's silver, and had to give up three beautiful vases that he was taking with him, but he succeeded in getting safely away.

After that, he lived in Florence until his death in 1570, and did some of his most important work there. Among other things, he was employed by the Duke of Florence to help in strengthening the fortifications, in the war with Siena, when the duke feared that the city might be attacked. It was also during this second part of his life that Cellini made his famous bronze statue of Perseus, which still stands in the Loggia di Lanzia in Florence.

CELLINI'S STORMY AND ADVENTUROUS CAREER

We know of no artist who had so stormy a career as Cellini. In our days, his violence and strange conduct would not be endured; but in the age in which he lived, the excellence of his art made him welcome wherever he went. Even princes of the church were glad to employ a genius who did everything to the best of his ability, who could make for them the finest statuary and goldsmith's work, who used precious stones

and precious metals, enamels, bronze and steel with equal readiness, and heightened the beauty of his work with a richness of fancy which no one in his time could rival. And his life was not all bad. He was good to his father, though he quarreled with him. He loved his brother, and went back to Florence to undertake the support of his sister and her six daughters.

It is said that when he was nearly sixty years old, he had serious thoughts of becoming a monk, but he soon gave up the idea. Some people say that he afterward married, and that when he died in 1570, he left two little children, but others say that he never married at all.

At the end of his life he began to write his story, and the book that he produced is valued by grown-ups even more than his work as an artist. It is not a book which would interest young people, but to older people it is a wonderful piece of work.

Some of his tales we know are twisted to glorify himself; but, in spite of its extravagance, his book gives us a most

vivid picture of his age. Everything of historical value that Cellini tells us is only a background for himself. Still, the book is valuable, as no other work of the age is, and it is one of the great classics for all time.

In his art, Cellini was a stormy enthusiast. He believed greatly in himself. If anybody said that he could not do a thing, he simply did it, not only because he loved his art, but because he loved still better that Benvenuto Cellini should prove wiser or more skilful than his critics or patrons. A famous incident in his career shows us the man as he was.

When Benvenuto promised to make a



CELLINI PRESENTING A VASE TO THE POPE

statue of Perseus for the Grand Duke of Florence, he prepared an exquisite model in wax, and presented it to the duke, who exclaimed:

"Benvenuto, this statue cannot be cast in bronze; it is not in the power of your art to compass it."

Again and again the duke tried to discourage the sculptor from attempting an impossible task; but Benvenuto's soul was set upon the achievement.

He laid in a great store of pinewood, and when his molds were ready, filled his furnace with materials for his bronze. Almost as soon as the pinewood was lighted, the flames sprang up to the roof with a roar, and in a few minutes the shop was ablaze. While the frightened workers knew not what to do, a storm of rain drove in from another quarter, and cooled the furnace. So hard did Benvenuto struggle against these trying accidents that he was stricken down with illness, and went to bed, expecting to die before morning. All the time he lay in bed he was crying out aloud:

"I am dying! I am dying!"

While he was in this parlous state a workman entered hurriedly, saying:

"Alas, poor Benvenuto, your work is spoiled, and the misfortune admits of no possible remedy."

The metal in the furnace had caked.

Cellini sprang from his sick-bed, rushed to the shop, and sent for fuel.

"Give your orders," said one of his men, "and we will all second you in what you command; we will assist you as long as we have breath in our bodies."

The new wood burned up, and the metal began to brighten.

Benvenuto sent men to the roof to look after the fire, which had acquired new force. Towards the garden he had

placed some tables, with pieces of tapestry and old clothes, in order to shelter him from the rain. He was continually shouting to his men, and bestirring them.

"Then," said he, "I caused a mass of pewter, weighing about sixty pounds, to be thrown upon the metal in the furnace, which, with other help, as the brisk wood fire, and

stirring it sometimes with iron and sometimes with long poles, soon became completely dissolved. Finding that, contrary to the opinion of my ignorant assistants, I had effected what seemed as difficult as to

raise the dead, I so recovered my vigor that I no longer perceived whether I had any fever, nor had I the least apprehension of death. Suddenly a loud noise was heard, and a glittering of fire flashed before our eyes, as if it had been the darting of a thunderbolt. Terror seized on all present, and on none more than myself. This tremendous noise being over, we began to stare at each other, and perceived that the cover of the furnace had burst and flown off, so that the bronze began to run."

But the metal did not run fast enough,

and, fearing that some had been lost in the explosion, Benvenuto ordered all his dishes and porringers of pewter to be thrown into the furnace. Then the metal ran freely, and the statue was cast.



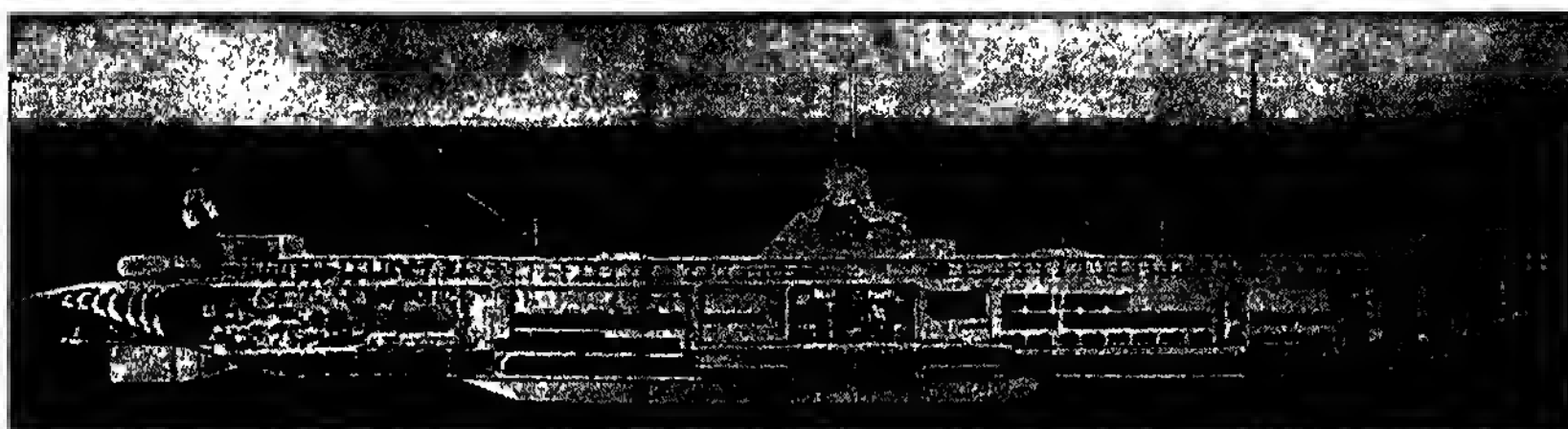
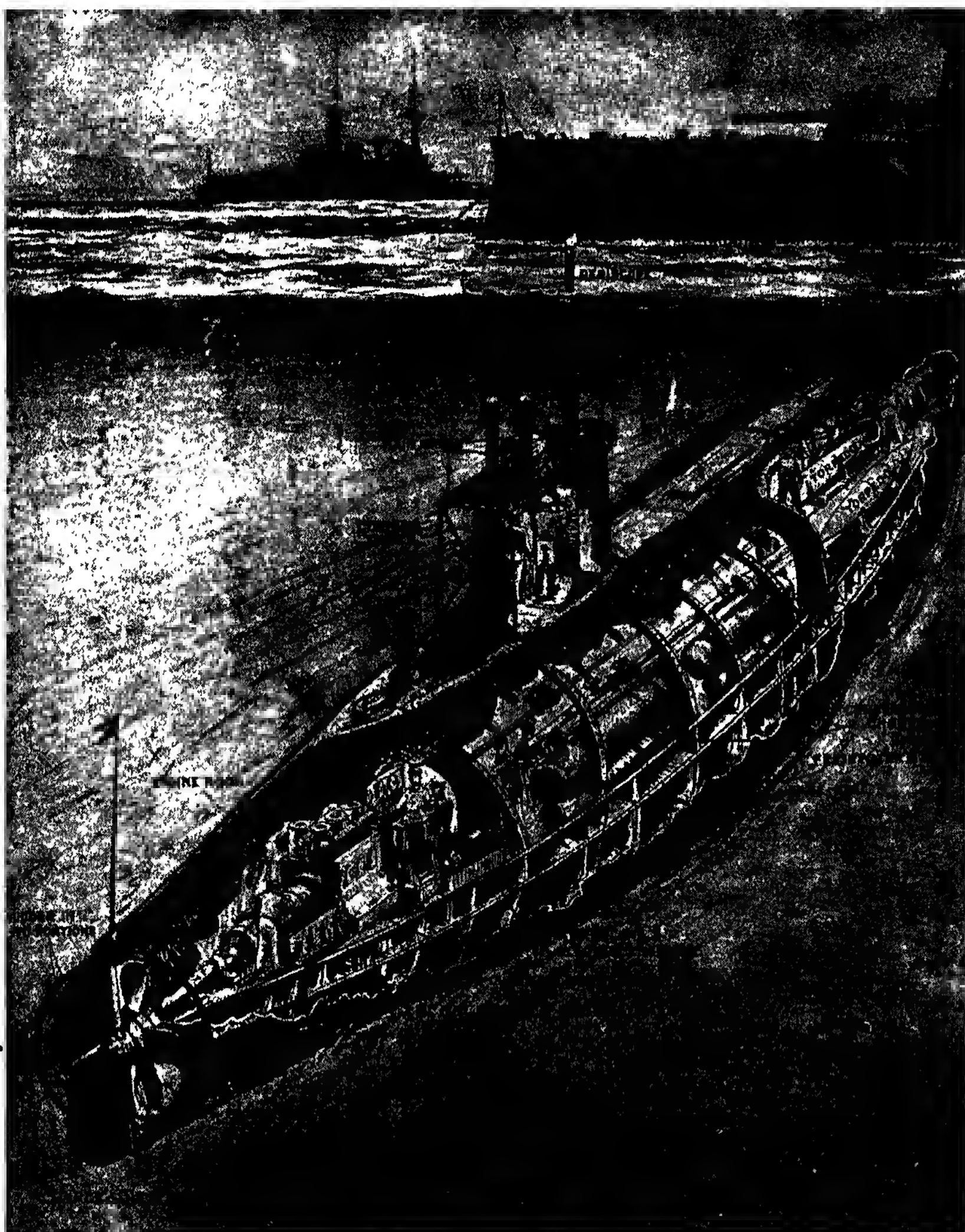
A SALT-CELLAR MADE BY CELLINI



BENVENUTO CELLINI IN HIS STUDIO

CONTINUED ON PAGE 5935.

A SHIP THAT GOES DOWN IN THE SEA



A SUBMARINE ABOUT TO FIRE A TORPEDO, AND A SECTION THROUGH THE CRAFT

The Book of FAMILIAR THINGS



A Flotilla of Submarines Running Awash.

THE SHIP BENEATH THE WATERS

MOST boys delight to read the books written by the famous French writer, Jules Verne, who died a few years ago. You can find some of his stories in **THE BOOK OF KNOWLEDGE**. He wrote scientific tales describing marvels which, at that time, nobody thought would be achieved. In 1873 he wrote a fascinating tale called "Twenty Thousand Leagues Under the Sea." That, in his day, seemed as impossible as the rest of his tales. To-day it is no longer impossible. Several nations have a number of ships in their navies which, if they cannot travel 20,000 leagues under the sea, can travel beneath the waves almost as easily as they can travel on the surface.

As long ago as the War of the Revolution, an American, David Bushnell, invented one of these ships. It was made of wood, with a magazine behind containing explosives. In this little boat the daring Sergeant Lee went right under the bows of the British ship Eagle and attached the magazine to its hull. The mine was not properly fastened, however, and exploded in the water about an hour after.

Another famous American, Robert Fulton, who built the Clermont, a little later offered Napoleon a sub-

CONTINUED FROM 5799

marine for his invasion of England.

During the Civil War in the United States, experiments were made with submarine boats, and since that time there have been many improvements. Now all navies have large numbers of them.

All of us know what these submarines are like. They are singular-looking vessels—long, shaped something like a cigar, but flat on the top to afford standing place for the officers and men. In the middle of the deck is a little tower, called a conning-tower, and this is the only way into the boat for the crew. The observer notices also, rising from the vessel, something which looks like a tiny lighthouse, or perhaps there are even two of these curious things. The important purpose which this serves we shall presently see.

Of course the submarine has engines to make it go, but these are driven, not by steam, but by gasoline. Its speed is much faster on the surface, where it can use these powerful engines. When it is under the water, it depends on storage batteries which drive electric motors, as the fumes of the gasoline would be harmful to the crew. The submarine is really made for attack. In defence it is helpless, unless it carries guns on the deck.

The barest touch of a ship's hull will rip open its shell, and send it to the bottom. As its only refuge is the sea, and as it can live only by stealth, it must have driving power that is noiseless and leaves no trace behind it. The electric motor is practically noiseless and heatless, and leaves no bubbles. The boat has the ordinary propeller, and the ordinary rudder to steer it, but it also has two other rudders, which work, not vertically, but horizontally, to make the ship dive down or come up.

Still, even with diving rudders of this sort, we cannot by any ordinary means make a floating vessel keep under water, so we have to increase the weight of the vessel. Valves are therefore opened in the submarine, and through these the sea-water rushes in and fills tanks built to receive it. When sufficient water has been taken in to make the vessel sink to a certain depth, the valves are closed, and then the boat works along under water at eight to twelve miles an hour.

Inside the ship there are from fifteen to thirty men, brave fellows all. They must remain in this ship under water, where no air can reach them. The ship carries compressed air, which is released, a little at a time, from special chambers, while the air which has become foul from having been breathed, is, like the exhaust gases from the engine, driven out of the ship. The men may have to stay for hours and hours under water, so they have all necessary supplies of food and water with them.

WHAT THE DEADLY TORPEDO IS LIKE

The weapon of the submarines is the torpedo, though large vessels of this kind now carry guns on the deck. How is the torpedo shot out without allowing the water to rush in? The torpedo tubes are in the bow of the ship, and each has a water-tight door at each end. To put the torpedo in position the men open only the inner door. When the missile is placed they close the inner door and open the outer one, ready for firing. The torpedo itself is like a small submarine. It has propellers and engines to drive it, a steering rudder, and diving rudders to keep it at the right depth. But there is no one aboard to guide it, so it must be self-acting. The torpedo is driven by compressed air, and there is a device which prevents the pressure of the air

from falling off, and so keeps up the speed of the terrible missile. A torpedo can travel four times as fast as a submarine, so that a modern one has a speed for a short range (up to 2,500 yards) of fifty knots or sea miles, which is equal to about fifty-seven and a half land miles an hour. The torpedo is not aimed straight at its mark of course, for allowance has to be made for the speed of both the submarine and its victim.

Have you ever wondered why the torpedo waits to explode till it strikes a ship? The head of the torpedo is filled with an explosive, and at its nose is a projecting pin which, if driven forcibly inwards, will explode the contents of the head. To prevent the pressure of water from exploding the torpedo as it travels along, there is a little revolving wheel, similar to those you see on the front of motor cars. By the time the torpedo has reached its journey's end, this little wheel has spun so that it unscrews and no longer locks the firing pin. The shock as the torpedo strikes the ship is then all that is necessary to cause a mighty explosion.

THE UNSEEN DANGERS OF THE DEEP WHICH THE SUBMARINE MUST FACE

The men in a submarine beneath the water cannot see what is taking place on the surface of the sea. It is possible for the officer who stands in the tower, which generally projects out of the water when the ship itself is only just under the surface, to observe what is happening on the surface of the sea; but if the submarine is traveling at a greater depth there can be no lookout in the tower, and direct observation can only be made through glass windows looking out into the depths of the sea.

But a clever inventor has overcome this difficulty. He has given to the crew of the submarine a wonderful eye by means of which they can see what is going on at the surface of the waters, though all the rest of the boat is under water. When the submarine is submerged, this wonderful instrument shows the commander what is happening in the world above, for as great a distance as thirteen miles all around. What is the marvelous instrument that gives him this power, as though he had a third eye? It is called the periscope, a word that comes from the Greek word *periskopein*, to look around. It is an instrument that looks around. We can understand how

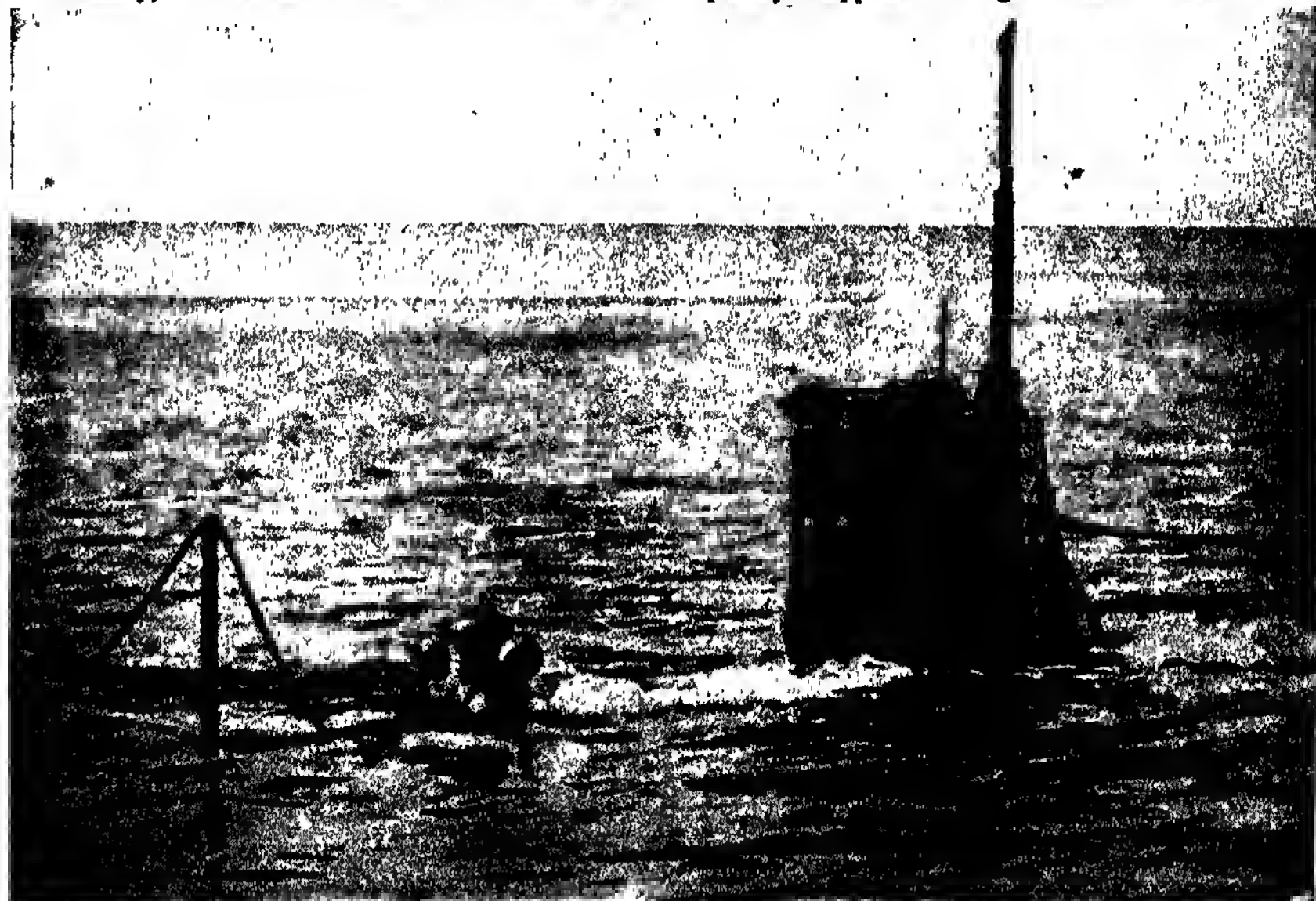
THE SHIPS THAT FIGHT UNDER THE SEA



Years ago a ship that could travel under the sea was a mere dream of the storytellers, but to-day every big navy has its fleets of submarine vessels, and they are familiar objects at all our naval ports. Here we see a type of the modern submarine, a large and swift vessel, that can sink a battleship, while itself keeping out of sight.



This is an earlier and smaller type of submarine boat, known, from the name of its inventor, as the Holland type. The vessel is traveling at full speed while half submerged, and members of the crew are standing on deck. If necessary, the boat can sink beneath the waves and completely disappear from sight in two or three minutes.



Here we see another type of submarine, with only its conning-tower visible above the water. It is about to take the final plunge beneath the waves, with its crew of sixteen officers and men, who, in actual war, can then do their deadly work unseen by the enemy. The conning-tower has a steel lid to resist the pressure of the water.

it works by looking at the pictures on these pages.

THE WONDERFUL EYE OF THE SUBMARINE THAT CAN SEE ALL ROUND

It looks like a small lighthouse, but instead of shedding forth light to enable people outside to see, it brings the pictures of outside objects inside. The periscope is a long tube that projects from the submarine above the surface of the sea. Near the top is a lens. This is the eye of the submarine. There are different kinds of periscopes. In the one in the picture on page 5863, the image is reflected down the tube, on to a flat surface below. The officer and crew of the submarine, by looking at the flat surface upon which the images of things above are reflected, can see what is happening all around them.

In the more common periscopes only the commander or observer looks through an eyepiece upon the reflected picture. There are horizontal and vertical marks on the mirror, by which the commander can estimate how far the enemy ship is from him, the rate at which it is going and the direction of its course. It is claimed that the first periscope ever used was made by one Thomas Doughty, an engineer in the United States Navy. During the Civil War, gunners from the high banks of a river were able to get the range of the ships below, and to do much damage to them and their crews. Finally, Doughty made a rude periscope, by which he was able to see the enemy gunners on the top of the cliff, and he signaled their whereabouts to his own crew and to other boats. The land forces soon learned to avoid the ship with the magic eye. During the Great War, soldiers in the trenches found the value of periscopes.

A THRILLING EXPERIENCE ON ONE OF THE UNDERSEA CRAFT

When the submarine is submerged it is blind, and deaf but for an instrument called a microphone. By electrical means, this magnifies sound waves which are traveling through the water, and the commander can pick up the noise of a surface propeller, or submarine signals.

On one occasion a submarine left its base, or station, and was traveling under water with its periscope just above the surface. The commander at the periscope saw a small steamer steering a course behind his ship. At the same time

his sounding apparatus told him that a screw steamer was near. Then the periscope was lifted a little higher in the water, and he saw a flotilla of five torpedo boats steaming near. He increased the speed of his boat and sank deeper, meaning to attack. Just as he was about to take aim, the boat began to roll in a curious way, and to rise and sink by turns. In a little while the commander discovered that his boat was entangled in a wire netting let down by the hunters around. He tried to get clear, but in vain. His boat was carried along in the net, but finally broke through.

By the pressure gauge the commander can tell to what depth he has sunk. It has an open end which passes out to the sea, and the deeper down the submarine goes the greater is the pressure of water on it. As the pressure is always the same for the same depth the gauge is marked off, and by looking at the dial the commander knows exactly to what depth he has taken the boat. A submarine cannot lie still at one depth, but must keep on the move or rise to the surface. It could anchor at any given depth but this would be inconvenient. The only time when it is stationary under water is when it goes to sleep at the bottom.

MEANS OF DEFENCE THAT HAVE BEEN ADOPTED AGAINST THE SUBMARINE

The submarine plays a game of hide-and-seek, over and under the surface of the waters. And the hunter has to take his chance of catching the elusive little diver. The best and most effective method of reducing the number of these little boats have been to have something on the spot to strike them when they appear. Small fleets of destroyers and "submarine chasers" have become a necessary part of every great navy. The United States has a patrol service of this kind consisting of boats of different sizes. The largest have a speed of nearly double that of a fast submarine on the surface, and are equipped with quick-firing guns. If the submarine submerges before it is hit, the boat will drop a bomb set to explode at a fixed depth of water. If the submarine is anywhere near the bomb it is likely to be destroyed by the explosion. Aeroplanes are useful for sighting undersea craft, because when the surface is calm they can get directly over the spot and look deep down into the water.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5875.

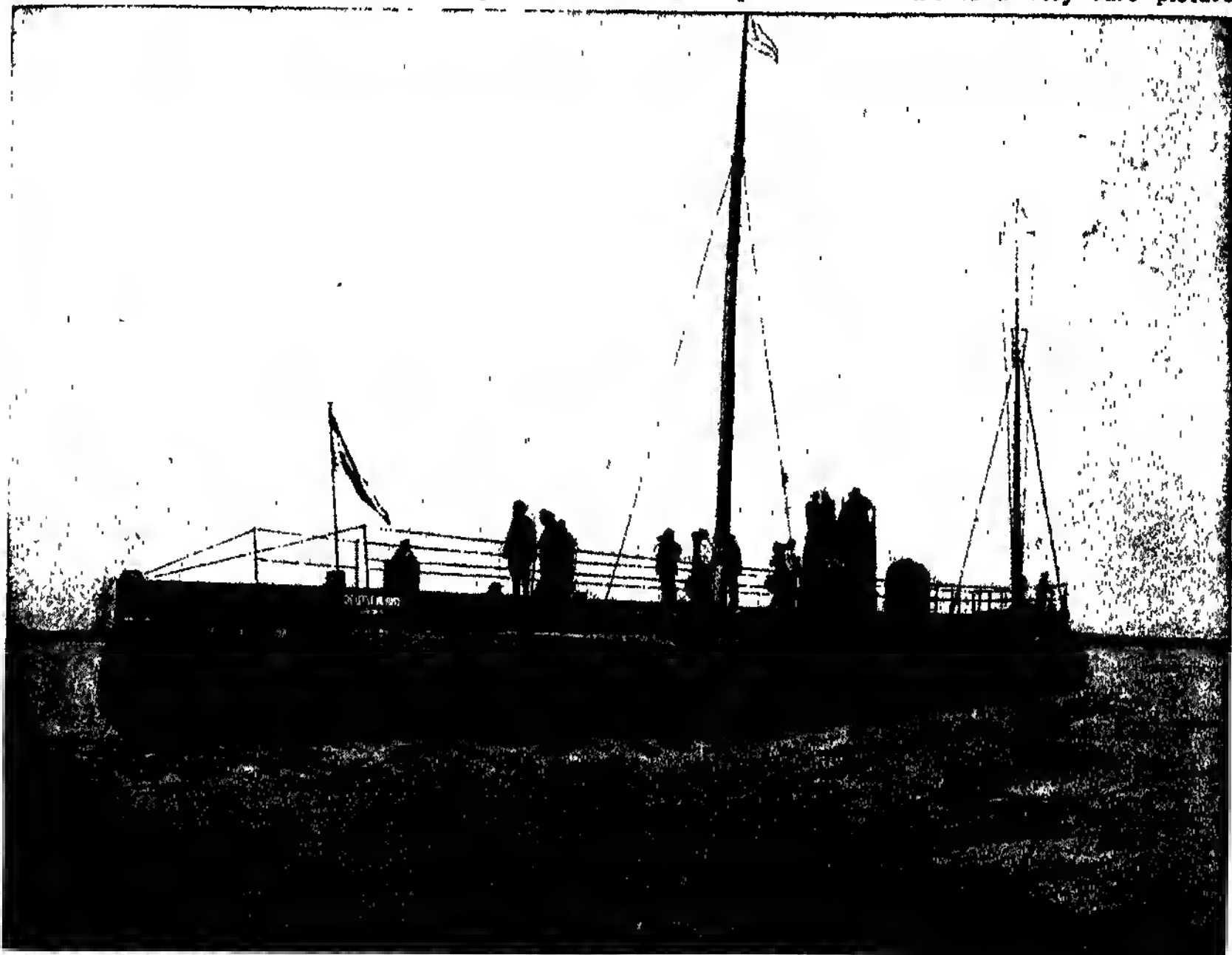
THE WONDER OF THE SUBMARINE



Here we see an officer looking through the periscope of a submarine though the boat itself is submerged. Perhaps he is watching the approach of a battleship. The tube may be turned in any direction.



The submarine is a very delicate machine with a bewildering array of wheels and levers. The round object in the centre of the picture is the inner door of a torpedo tube. This is a very rare picture.



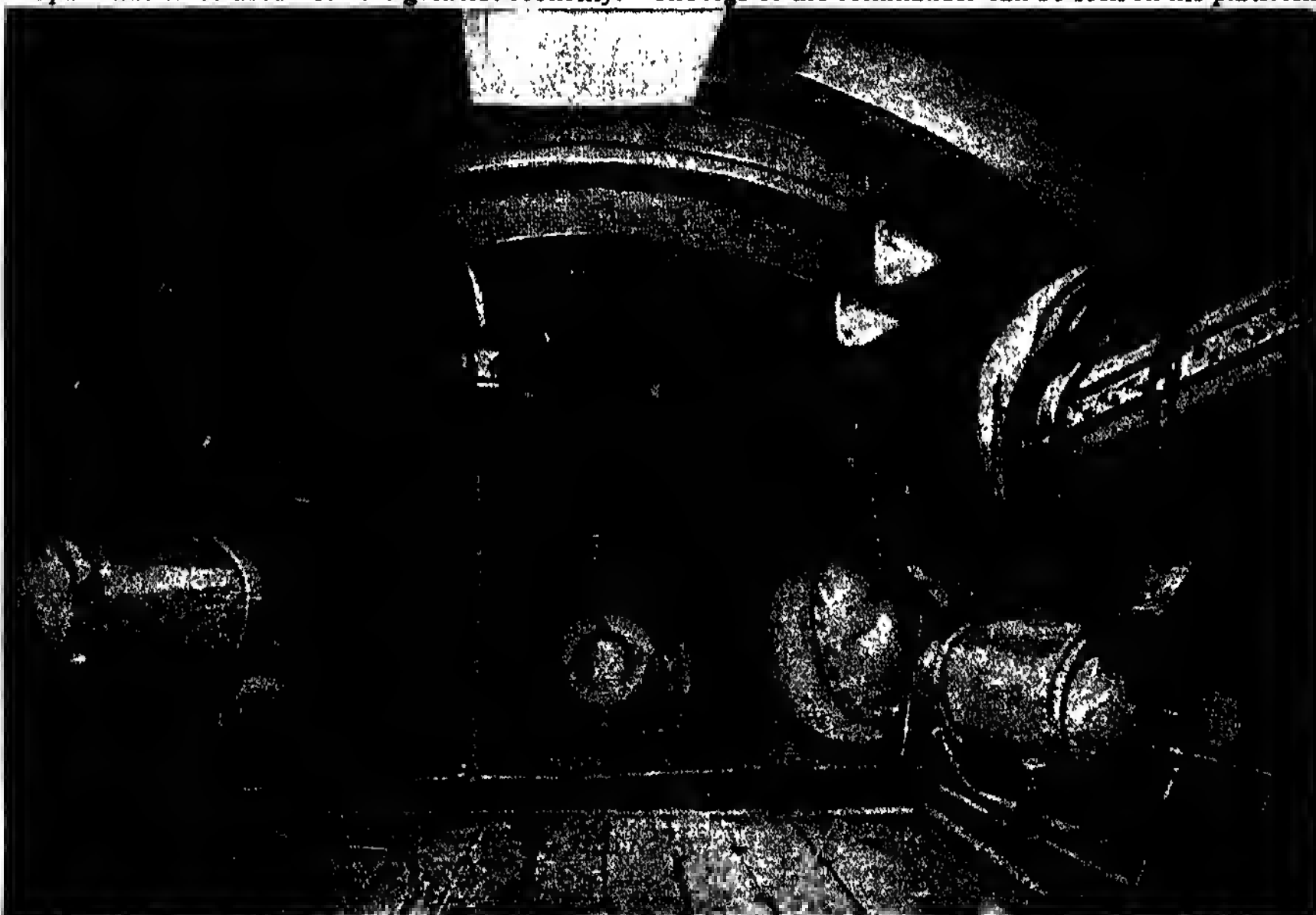
Before the United States entered the Great War, the German merchant submarine Deutschland made two trips across the Atlantic, and brought in valuable cargoes of dye stuffs and other goods of high value in small bulk. Though the boat made the trip successfully the amount of cargo space is so small that such boats cannot be used to advantage.

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A FIGHTING SHIP BENEATH THE WAVES



This is how the crew of a submarine use their deadly weapons as they attack an enemy. They are just firing a torpedo from the forepart of the vessel, and this, if well aimed, may sink some mighty battleship that has cost, perhaps, ten million dollars. The men appear to be cramped for room, but on a submarine every inch of space has to be used with the greatest economy. The legs of the commander can be seen on his platform.



In this picture we are looking right into the bow, or nose, of the submarine, and in the centre is the tube through which the torpedo is sent on its deadly journey. To the right and left are large tanks of compressed air. This is needed for breathing purposes, and to fire the torpedoes. Submarines carry from six to twenty torpedoes, each capable of sinking a huge battleship, although many of them miss their mark and are lost, due to faulty aim.

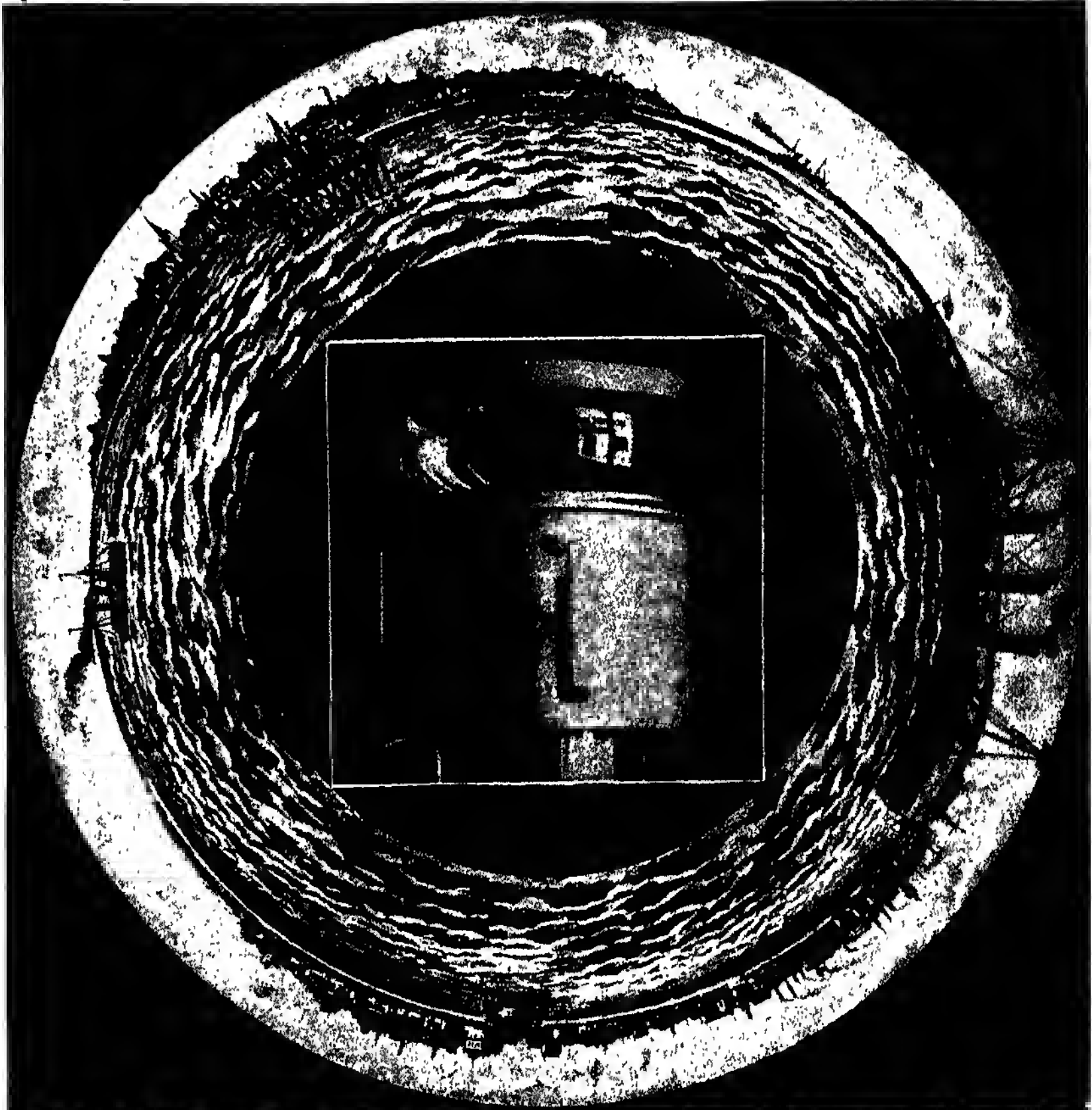
THE WONDERFUL EYE OF THE SUBMARINE



This officer is watching the manometers, the instrument which tells whether the air in the submarine is pure enough for the crew to breathe with safety.



The sailors in this picture are launching a torpedo on its journey of death beneath the sea. Nothing can resist this terrible instrument if it once hits its mark.



The danger of being in a submarine have been reduced by the invention of a little instrument called a periscope with one or two of which all submarines are fitted. This enables those in the submarine to see what is happening around them in the sunlight away above their heads. The periscope is the wonderful eye of the submarine. It is a long tube with an arrangement of mirrors at the top. One kind is shown in the centre picture. This catches a view of the scene, and reflects it on a table below. Most periscopes show only a part of a circle.

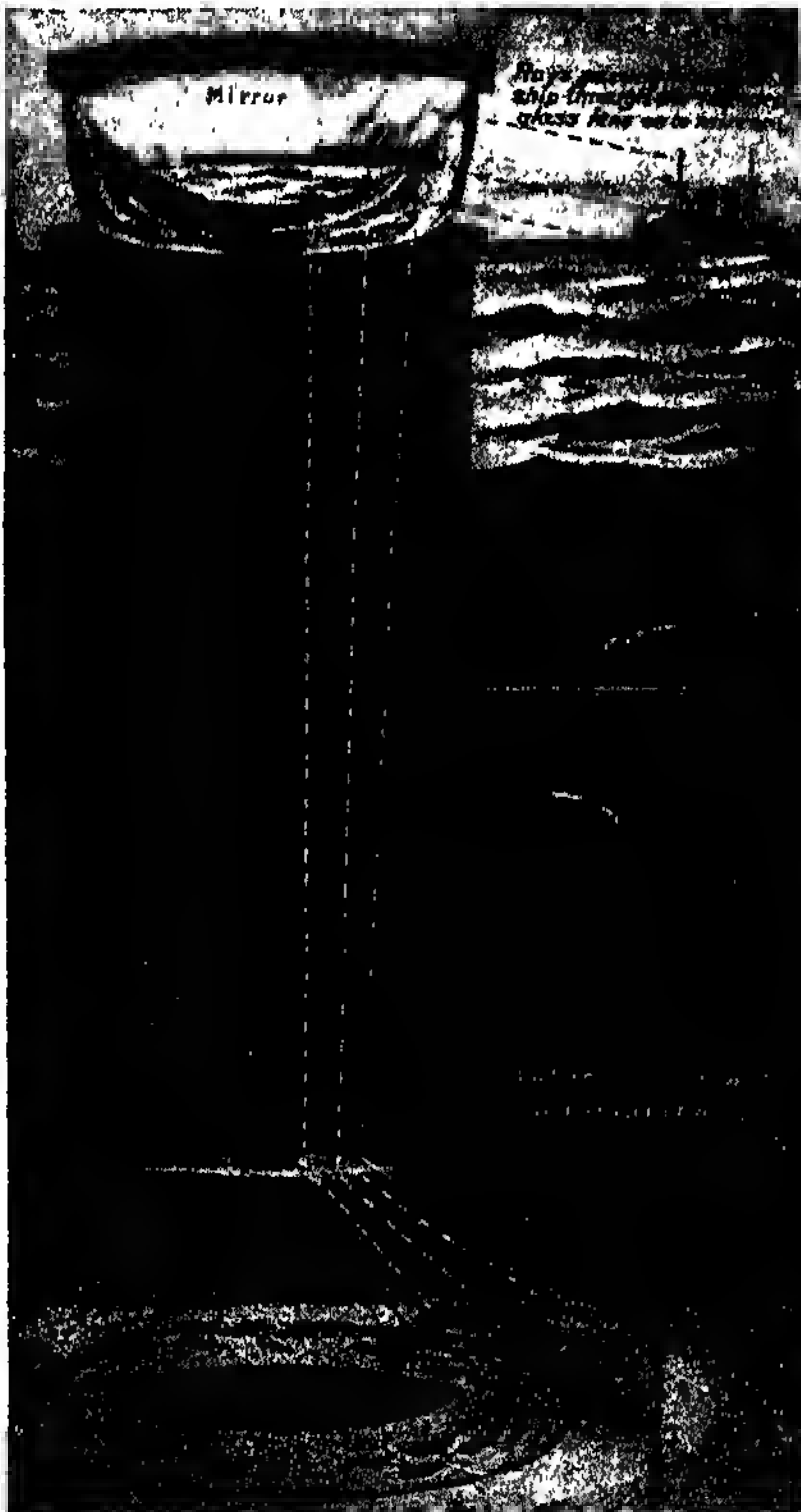
LOOKING OUT ABOVE AND BELOW THE WAVES



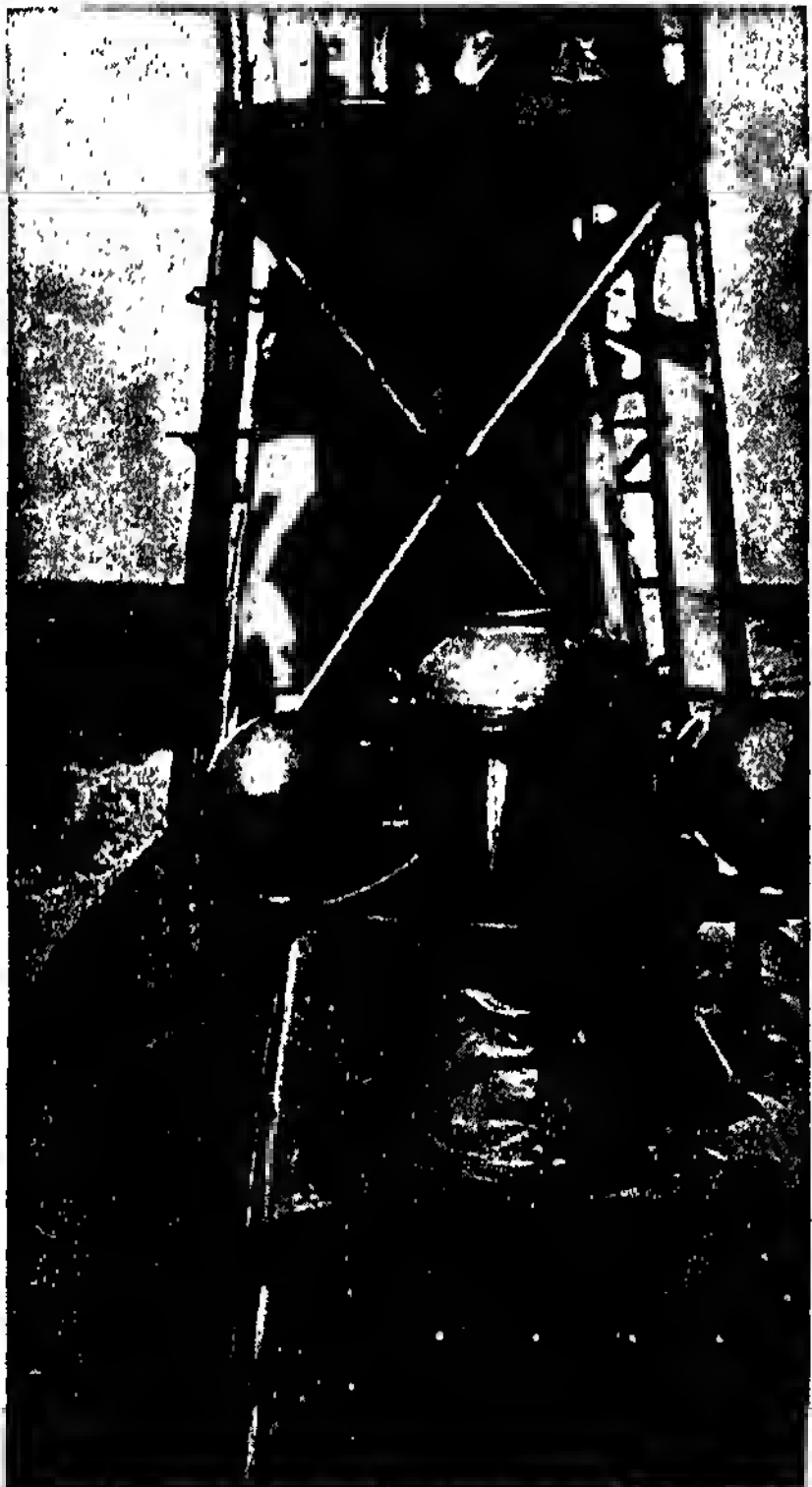
Here the officers are studying the picture which the periscope has reflected, somewhat in the same way as a picture is thrown on the sheet by a magic lantern.



This picture is taken just before sinking. Air supply in a submarine is maintained by air-compressors. Formerly, white mice were kept to indicate if the air got foul.



Here we see how one type of periscope works. The ship on the waves is seen by the lens of the periscope, and the picture is reflected down the tube on to the table.



This picture of the conning-tower and the apparatus on deck shows the massiveness of the modern kind of submarine. Larger types are constantly being built.

THE NEXT STORY OF FAMILIAR THINGS IS ON PAGE 5875.

The Book of SCHOOL LESSONS



READING

FOREIGN WORDS AND PHRASES

IN written and spoken English many words and phrases are used that are not English at all. A great number of such words and phrases are used because they express the meaning of the writer, or speaker, better than any English words or phrases that he could use. Examples of this class are *chic*, *de trop*, and *ad libitum*. Others are legacies from the time when our laws were composed in Latin, such as *ad referendum*, and many Church phrases have come to us from the time when the language of the Church was Latin, like *Dei gratia*. Others, such as *et tu Brute*, were the sayings of famous men

CONTINUED FROM 5671

upon memorable occasions. For whatever reason they have come

to be used in speaking or writing in English, they are interesting as showing how language grows, and how one language borrows words from other languages. A very large part of the recognised English language has been borrowed in this way from French and other sources, and, unless we study the subject very closely, we are liable to forget that these words originally were anything but English. We should try to understand all that we read, and the following table explains the most familiar of the foreign phrases that we come across in papers and books.

Ab ante—From before: Latin.	Ad infinitum—To infinity; and so on forever; often written ad inf.: Latin.	Affaire d'amour—A love affair: French.
A bas—Down, or down with: French.	Ad initium—At or to the beginning; often written ad init.: Latin.	Affaire de cœur—An affair of the heart: French.
Ab initio—From the beginning; frequently written ab init.: Latin.	Ad interim—In the meantime; often written ad int.: Latin.	Affaire d'honneur—An affair of honor; frequently used of a duel: French.
Ab intra—From within: Latin.	Ad libitum—At pleasure; usually written ad lib.: Latin.	A gauche—To the left: French.
A bon marché—Cheap: French.	Ad locum—At the place; frequently written ad loc.: Latin.	Aîné, aînée—Senior: French.
Absit—Let him be absent: Latin.	Ad manum—At hand; ready: Latin.	A la carte—According to the bill of fare: French.
Ad avisandum—Literally, to be considered; used principally in Scotland to indicate that judgment in a trial is reserved: Latin.	Ad nauseam—To the point of loathing: Latin.	A la mode—In the fashion: French.
A demi—By halves: French.	Ad referendum—To be further considered: Latin.	A la mort—To the death: French.
Ad finem—To the end; usually written ad fin.: Latin.	A droite—To the right: French.	A l'anglaise—In English style: French.
Ad hoc—For this (end): Latin.	Adsum—I am here: Latin.	Al fresco—In the open air: Italian.
Ad hunc locum—At this place; usually written ad h. l.: Latin.	Ad valorem—According to value; frequently written ad val.: Latin.	Alma mater—Literally, kind mother; applied to the university that a student has attended: Latin.
A die—From that day: Latin.		A l'outrance—A frequently-made error for à outrance: French.

- Alter ego—Literally, other self; used sometimes for a bosom friend and sometimes for someone else with a close resemblance: Latin.
- Alter idem—Another of the same: Latin.
- Altesse—Highness: French.
- A majori ad minus—From the greater to the less; sometimes the last two words are omitted: Latin.
- A merveille—Wonderfully: French.
- A minori ad majus—From the less to the greater; the last two words are frequently omitted: Latin.
- A mon avis—In my opinion: French.
- Amor vincit omnia—Love conquers all things: Latin.
- Amour propre—Self-esteem: French.
- Ancien régime—The old order of things: French.
- Anno domini—In the year of our Lord; usually written A.D.: Latin.
- Anno mundi—In the year of the world; usually written A.M.: Latin.
- Annus mirabilis—Year of wonders: Latin.
- Ante bellum—Before the war: Latin.
- Ante Christum—Before Christ; frequently written A.C., but B.C. is more common: Latin.
- Ante meridiem—Before noon: Latin.
- A outrance—To the bitter end: French.
- Apologia—Apology: Greek.
- A posteriori—From effect to cause: Latin.
- Appartement—A suite of rooms; a flat: French.
- A priori—From cause to effect: Latin.
- Aqua fortis—Strong water; the name given to nitric acid, which dissolves nearly all metals except gold and a few other precious metals: Latin.
- Aqua regia—Literally, royal water, applied to a mixture of nitric and hydrochloric acids, which dissolve gold when mixed, but do not do so singly: Latin.
- Aqua vitæ—Water of life: Latin.
- Ars longa, vita brevis—Art is long, life is short: Latin.
- A toute force—By all means: French.
- A tout prix—At any price: French.
- A travers—Across: French.
- Au contraire—On the contrary: French.
- Au courant—Fully informed: French.
- Au fait—Well acquainted: French.
- Au fond—To the bottom: French.
- Auf Wiedersehen—Till we meet again: German.
- Au plaisir de vous revoir—Till I have the pleasure of seeing you again: French.
- Au revoir—Until we meet again: French.
- Autres temps, autres mœurs—Other times, other manners: French.
- Aux armes—To arms: French.
- Avant-coureur—Forerunner: French.
- Ave, Cæsar, morituri te salutant—Hail, Cæsar, those about to die salute thee; the greeting of the gladiators: Latin.
- Ballon d'essai—A trial balloon; a "feeler": French.
- Belles-lettres—Literally, fine letters; elegant literature, poetry, fiction, and criticism: French.
- Belle vue—Fine view or prospect: French.
- Bête noir—Black beast; pet aversion: French.
- Bien—Well: French.
- Bien-aimé—Well-beloved: French.
- Bis—Twice; again: French.
- Bona fide—In good faith: Latin.
- Bona fides—Good faith: Latin.
- Bonhomie—Good nature: French.
- Bon jour—Good morning: French.
- Bon marché—Cheap, a good bargain: French.
- Bonne foi—Good faith: French.
- Bon soir—Good evening: French.
- Bon ton—The height of fashion: French.
- Bon vivant—Good liver; jolly fellow: French.
- Bon voyage—A pleasant journey: French.
- Bourse—Stock Exchange: French.
- Café au lait—Coffee with milk: French.
- Café noir—Black coffee; coffee without milk: French.
- Cap-à-pie—From head to foot: Old French.
- Carte blanche—Literally, a white card; full powers to act: French.
- Casus belli—Reason for war: Latin.
- Cause célèbre—Famous trial: French.
- Cave canem—Beware of the dog: Latin.
- Centum—A hundred; generally written cent.: Latin.
- C'est-à-dire—That is to say: French.
- C'est magnifique, mais ce n'est pas la guerre—It is magnificent, but it is not war; historic saying of a French General who witnessed the charge of the Light Brigade at Balaclava: French.
- Chemin de fer—Railway: French.
- Cherchez la femme—Look for the woman; there is a woman at the bottom of it: French.
- Chic—Stylish: French.
- Cogito, ergo—sum—I think, therefore I am; the famous proposition of the French philosopher Descartes: Latin.
- Coiffeur—Hairdresser: French.
- Comme il faut—As it ought to be; gentlemanly or ladylike: French.
- Compos mentis—Of sound mind; sane: Latin.
- Concours—Competition: French.
- Contretemps—An inopportune happening; a hitch: French.
- Corps diplomatique—Diplomatic body: French.
- Coup d'état—An unexpected stroke of policy: French.
- Coup de grâce—Finishing stroke: French.
- Crème de la crème—Cream of the cream: French.
- Cul-de-sac—Literally, bottom of the sack; a street open only at one end: French.
- Cum grano salis—With a grain of salt; with some allowance for exaggeration: Latin.
- De die in diem—From day to day: Latin.
- De facto—From the fact; actual: Latin.
- Dei gratia—By the grace of God; frequently written D.G.: Latin.
- Déjeuner—Lunch: French.
- De novo—Anew: Latin.
- Deo gratias—Thanks to God: Latin.
- De profundis—Out of the depths: Latin.
- De rigueur—Indispensable: French.
- De trop—Too much or too many; intrusive: French.
- Deus ex machina—Literally, a god from the machine; an apparent forced method or device in a plot: Latin.

- Deus vult**—God wills it; the battle-cry of the Crusaders: Latin.
- Dies iræ**—The day of wrath; the Judgment Day: Latin.
- Dieu défend le droit**—God defends the right: French.
- Dieu et mon droit**—God and my right; the motto on the Royal arms of the British Sovereign: French.
- Dit**—Called, said: French.
- Dolce far niente**—Sweet doing nothing: Italian.
- Domine, dirige nos**—Lord, guide us; the motto of London, England: Latin.
- Donnerwetter**—Thunderstorms; used as an ejaculation, as, for instance, "Great Scott," in English: German.
- Double entente**—Double meaning: French.
- Dramatis personæ**—Characters in a play: Latin.
- Dulce "domum"**—Sweet "homewards"; from a Winchester (England) school song: Latin.
- Dum spiro, spero**—While I breathe, I hope: Latin.
- Eau sucrée**—Sugared water: French.
- Ecce homo**—Behold the man! The expression used by Pilate when Christ appeared before the mob; also the title of a book by Sir J. R. Seeley, and of famous paintings by Correggio and by Guido Reni: Latin.
- Edition de luxe**—A luxurious and expensive edition of a book: French.
- Eisen und Blut**—Bismarck's famous phrase, meaning iron and blood: German.
- El dorado**—Golden land: Spanish.
- Embonpoint**—Stout or stoutness; literally, in good form: French.
- Emeritus**—Retired; generally applied to a professor: Latin.
- En attendant**—In the meantime: French.
- En avant**—Forward: French.
- En déshabillé**—In undress: French.
- En évidence**—Conspicuous: French.
- En famille**—In the family circle: French.
- Enfant terrible**—Literally, terrible child; used of a child who says indiscreet things that annoy or confuse his elders: French.
- En fête**—On holiday: French.
- En masse**—In a body: French.
- En passant**—In passing: French.
- En route**—On the road: French.
- En suite**—In succession; frequently misused by being made to mean "to match": French.
- Entente cordiale**—Good international understanding; particularly applied to British and French national friendship: French.
- Entourage**—Surroundings; followers: French.
- En tout cas**—In any case; also a sunshade: French.
- Entre nous**—Between ourselves: French.
- Entrez**—Come in: French.
- Errare est humanum**—To err is human: Latin.
- Et alia**—And other things; generally written *et al.*: Latin.
- Et alii**—And other persons; generally written *et al.*: Latin.
- Et cetera**—And so on, and other things; usually written *etc.*: Latin.
- Et tu, Brute**—And you, Brutus; Cæsar's exclamation when he saw his friend Brutus among his assassins: Latin.
- Eureka**—I have found it; discovered at last: Greek.
- Ewigkeit**—Eternity: German.
- Ex cathedra**—Literally, from the chair; judicially or officially: Latin.
- Excelsior**—Higher: Latin.
- Exempli gratia**—For example; frequently written *e.g.*: Latin.
- Exeunt omnes**—All go out: Latin.
- Ex libris**—From the books; usually followed by the name of a person in the possessive case: Latin.
- Ex nihilo nihil fit**—From nothing comes nothing: Latin.
- Ex officio**—Officially: Latin.
- Ex parte**—On one side; biased: Latin.
- Extra muros**—Beyond the walls: Latin.
- Facile princeps**—Easily first: Latin.
- Facta non verba**—Deeds, not words: Latin.
- Factum est**—It is done: Latin.
- Fait accompli**—An accomplished fact: French.
- Far niente**—Doing nothing: Italian.
- Faux pas**—A false step or mistake: French.
- Felo de se**—Suicide: Latin.
- Femme de chambre**—Lady's maid: French.
- Fidei defensor**—Defender of the Faith: Latin.
- Foie gras**—Fat liver; fat goose livers are made into *paté de foie gras*: French.
- Fortiter, fideliter, feliciter**—Firmly, faithfully, felicitously: Latin.
- Fortiter in re, suaviter in modo**—Forcibly in deed, gently in manner: Latin.
- Fra**—Brother; the title of a friar: Italian.
- Front à front**—Face to face: French.
- Gamin**—Street urchin; ragamuffin: French.
- Garçon**—Boy; waiter: French.
- Gardez**—Take care: French.
- Gloria in excelsis**—Glory to God in the highest: Latin.
- Gloria Patri**—Glory be to the Father: Latin.
- Grâce à Dieu**—Thanks to God: French.
- Hic est**—This is; generally written *h.e.*: Latin.
- Hic et ubique**—Here and everywhere: Latin.
- Hic jacet**—Here lies; frequently written *H.J.*: Latin.
- Hic requiescat in pace**—Here rests in peace; frequently written *H.R.I.P.*: Latin.
- Hier spricht man Deutsch**—German spoken here: German.
- Hoc anno**—In this year: Latin.
- Hoc est**—That is; generally written *h.e.*: Latin.
- Hoch**—Your health, in proposing a toast: German.
- Homini est errare**—To err is the lot of man: Latin.
- Homme d'affaires**—Man of business: French.
- Homme de lettres**—Man of letters: French.
- Homme d'esprit**—Man of wit: French.
- Homme du monde**—Man of fashion: French.
- Honi soit qui mal y pense**—Shame be to him who thinks ill of it—the motto of the Order of the Garter: French.
- Horribile dictu**—Horrible to relate: Latin.
- Hors de combat**—Out of the fight; disabled: French.
- Hôtel de ville**—Town or city hall: French.
- Hôtel Dieu**—God's house; hospital: French.
- Humanum est errare**—To err is human: Latin.
- Ibidem**—In the same place, or in the same case: Latin.
- Ich dien**—I serve; the motto of the Prince of Wales: German.
- Ici on parle français**—French spoken here: French.
- Idem**—The same: Latin.
- Idem quod**—The same as; frequently written *i.q.*: Latin.
- Id est**—That is; generally written *i.e.*: Latin.

Impasse—An insuperable obstacle; a sticking point: French.

Impedimenta—Luggage; army baggage: Latin.

Imperium in imperio—A state within a state: Latin.

In articulo mortis—At the point of death: Latin.

In camera—In private: Latin.

Incognito—Privately; under an assumed name; generally written *incog.*: Italian.

In Dei nomine—In the name of God; frequently written *I.D.N.*: Latin.

Index expurgatorius—List of forbidden books: Latin.

In Domino—In the Lord: Latin.

In extremis—At the point of death: Latin.

In forma pauperis—As a pauper: Latin.

Infra—Below; often written *inf.*: Latin.

In loco parentis—In the place of a parent: Latin.

In memoriam—In memory: Latin.

In pace—In peace: Latin.

In posse—Within the range of possibility: Latin.

In propria persona—In person: Latin.

In re—In the matter of; concerning: Latin.

In situ—In its original place: Latin.

In statu quo—In the former state: Latin.

Inter alia—Among other things: Latin.

Inter alios—Among other persons: Latin.

Inter nos—Between ourselves: Latin.

Inter se—Among themselves: Latin.

In toto—Entirely: Latin.

Iipse dixit—His mere statement; literally, he himself said it: Latin.

Ipsissima verba—The very words: Latin.

Ipsso facto—Virtually: Latin.

Jeu de mots—A pun; literally, a play on words: French.

Jeu d'esprit—A witticism: French.

Labore et honore—By labor and honor: Latin.

Lapsus lingue—Slip of the tongue: Latin.

Lares et penates—Household gods; used of household effects, such as furniture: Latin.

Laus Deo—Praise to God: Latin.

Le beau monde—The world of fashion: French.

Le grand monarque—The great monarch, Louis XIV.: French.

Le roi le veult—The king wills it; the words in which the King of Great Britain gives his assent to a Law passed by Parliament: Norman French.

Lèse majesté—Literally, injured majesty; an offence of disrespect constituting a mild form of treason: French.

L'état, c'est moi—I am the state; a saying of Louis XIV.: French.

Liberté, égalité, fraternité—Liberty, equality, fraternity; the motto of the French Republic: French.

Locum tenens—Literally, holding the place; a temporary substitute: Latin.

Locus standi—Standing place; right to interfere: Latin.

Loquitur—Speaks; frequently written *loq.*: Latin.

Ma chère—My dear: French.

Ma foi—My faith: French.

Magnum bonum—A great good: Latin.

Magnum opus—A great work: Latin.

Mal à propos—Unsuitable; out of place: French.

Mal de mer—Sea-sickness: French.

Mandamus—Literally, we command; used to indicate an order made by a higher court to a lower: Latin.

Materfamilias—The mother of a family: Latin.

Materia medica—The science that studies the remedies used in medicine: Latin.

Memorabilia—Things to be remembered: Latin.

Mens sana in corpore sano—A sound mind in a sound body: Latin.

Mésalliance—A marriage between two people of different social positions: French.

Meum et tuum—Mine and thine: Latin.

Mirabile dictu—Wonderful to tell: Latin.

Mirabilia—Wonderful things: Latin.

Mise en scène—Stage get-up: French.

Modus—Manner: Latin.

Modus operandi—Mode of operation: Latin.

Modus vivendi—Literally, a way of living; a settlement or compromise between opposite parties in a dispute: Latin.

Mon ami—My friend: French.

Mon cher—My dear: French.

Multum in parvo—Much in little: Latin.

Née—Born; the expression "Mrs. Smith née Jones" indicates that Jones was Mrs. Smith's name before marriage: French.

Nemine contradicente—With no one opposing; often written *nem. con.*: Latin.

Ne plus ultra—Nothing further: Latin.

Nil desperandum—Never despair: Latin.

Noblesse oblige—Rank has obligations: French.

Nolens volens—Willing or unwilling: Latin.

Nom de guerre—Literally, war name; assumed name: French.

Nom de plume—Literally, pen name; name assumed by a writer. The words are French, but the expression is not good French idiom: French.

Non compos mentis—Not of sound mind: Latin.

Non sequitur—A wrong conclusion: Latin.

Nota bene—Note well; usually written *n.b.*: Latin.

Notre Dame—Our Lady; the Virgin Mary: French.

Nouveaux riches—Newly rich; upstarts: French.

Nulli secundus—Second to none: Latin.

Obiit—He, or she, died: Latin.

Obiter—By the way: Latin.

Obiter dictum—A cursory remark (plural, *dicta*): Latin.

Octroi—Duties collected at the gates of a city or town: French.

Œil de bœuf—A bull's-eye; a small circular window: French.

Œuvres—Works: French.

Omnia vincit amor—Love conquers all: Latin.

On dit—They say; a flying rumor: French.

Ora et labora—Pray and work: Latin.

Ora pro nobis—Pray for us: Latin.

O tempora! O mores!—Literally, Oh, times! Oh, manners! What sad times! What awful doings: Latin.

Pace tua—By your leave: Latin.

Par excellence—By excellence; superb: French.

Par exemple—For example: French.

Pari passu—Literally, with equal pace; together: Latin.

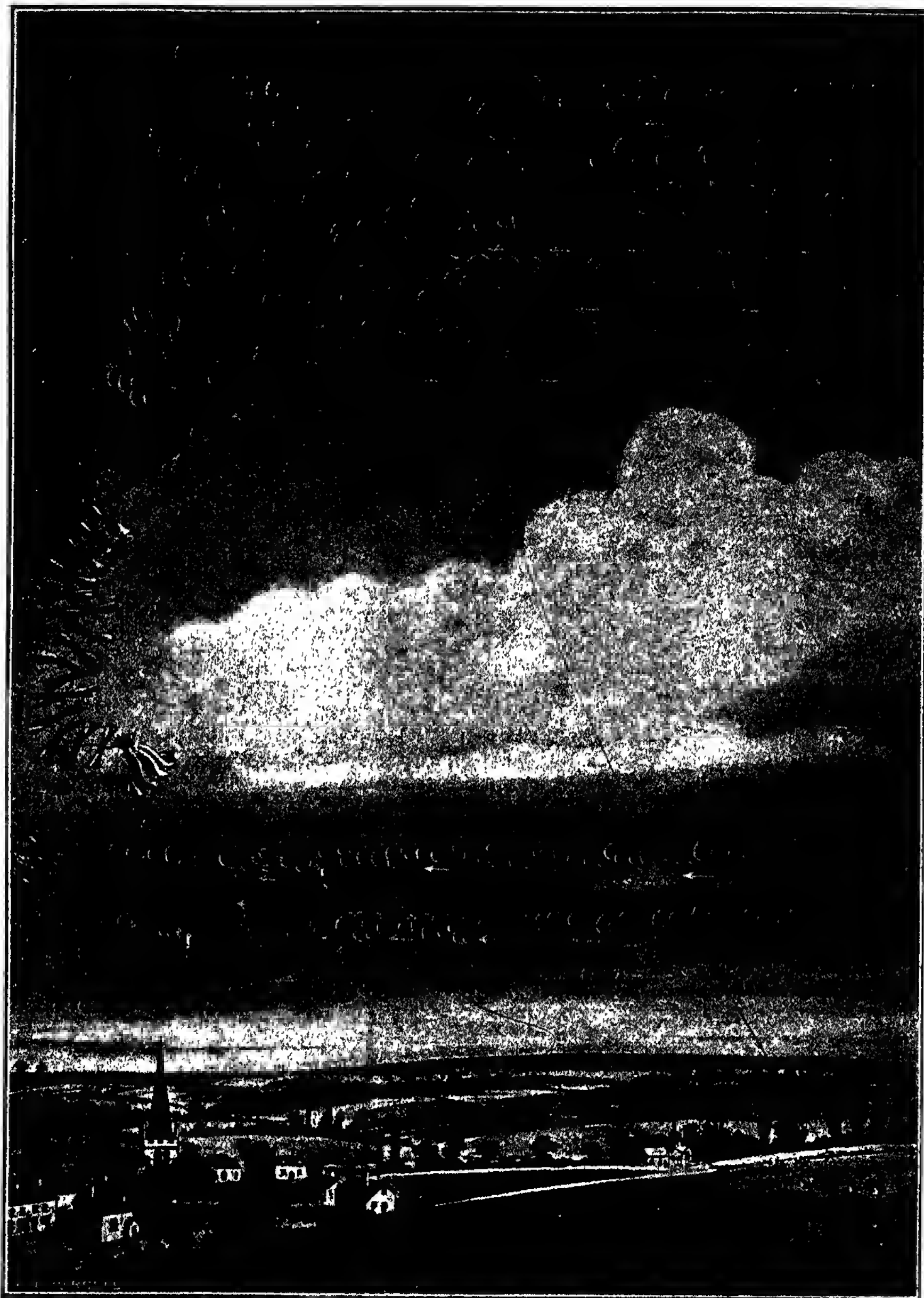
Parvenu—Literally, arrived; an upstart: French.

THE BOOK OF SCHOOL LESSONS

Paterfamilias —Father of a family: Latin.	Quod vide —Which see; generally written q.v.: Latin.	Sub voce —Under the word; as, for example, under the word in a dictionary or encyclopædia: Latin.
Pater patriæ —Father of his country: Latin.	Quo vadis —Whither goest thou: Latin.	Sui generis —Of its own species; peculiar: Latin.
Per annum —By the year; frequently written per an.: Latin.	Raison d'être —Reason for being: French.	Summum bonum —The highest good: Latin.
Per centum —By the hundred; also written per cent., p.c., or %: Latin.	Rara avis —A rare bird; a curiosity: Latin.	Supra —Above: Latin.
Pièce de résistance —Literally, piece of or for resistance; the chief course at a dinner: French.	Reductio ad absurdum —Proof by proving the ridiculousness of the contrary: Latin.	Tableau vivant —Living picture: French.
Pied-à-terre —Temporary lodging: French.	Répondez, s'il vous plaît —Reply, if you please: French.	Tempus fugit —Time flies: Latin.
Pinxit —Painted: Latin.	Requiescat in pace —May he rest in peace: Latin.	Terra incognita —An unknown country: Latin.
Pis aller —Literally, worst go; a makeshift: French.	Ruse de guerre —Stratagem: French.	Tête-à-tête —Literally, head to head; a private conversation between two: French.
Pleno jure —With full powers: Latin.	Rus in urbe —Country in the city: Latin.	Tour de force —A feat: French.
Pons asinorum —Literally, the bridge of asses; usually applied to Euclid i. v.: Latin.	Sancta simplicitas —Child-like simplicity: Latin.	Tu quoque, Brute —And thou, too, Brutus; the same as et tu, Brute: Latin.
Poste restante —A department in a post-office where letters lie till called for by the person to whom they are addressed: French.	Sanctum sanctorum —Holy of holies: Latin.	Ultima thule —The farthest boundary: Latin.
Post mortem —After death: Latin.	Sang froid —Literally, cold blood; indifference: French.	Ultimo —Last; usually written ult.: Latin.
Post obitum —After death: Latin.	Sans cérémonie —Without ceremony; informal: French.	Ultra vires —Beyond one's power: Latin.
Postscriptum —Written after; generally written p.s.: Latin.	Sans culottes —Breechless; a name given to some agitators at the beginning of the French Revolution: French.	Vade mecum —Go with me; a constant companion: Latin.
Pot pourri —A mixture of dried flowers: French.	Sans peur et sans reproche —Without fear and without reproach; the phrase used to describe the Chevalier Bayard (about whom we have read): French.	Veni, vidi, vici —I came, I saw, I conquered; Caesar's famous saying: Latin.
Pour prendre congé or p.p.c.—To take leave: French.	Sartor resartus —The tailor reclothed; the name of a book by Carlyle: Latin.	Verbum sapienti sat est —A word to the wise man is sufficient; often contracted to verb. sap.: Latin.
Presto —Quick: Italian.	Savoir-faire —Tact: French.	Versus —Against; often written v.: Latin.
Prima facie —On the first view: Latin.	Semper eadem, or semper idem —Always the same: Latin.	Via —By way of: Latin.
Primo —In the first place: Latin.	Sequentes, or sequentia —The following; generally written seq.: Latin.	Via media —A middle course: Latin.
Pro and con —For and against: Latin.	Seriatim —One after another: Latin.	Vice —In place of: Latin.
Pro forma —As a matter of form: Latin.	Sic transit gloria mundi —Thus passes worldly glory: Latin.	Vice versa —Transposed: Latin.
Pro patria —For our country: Latin.	Sine die —Without day; indefinitely; frequently written s. d.: Latin.	Videlicet —Namely; usually written viz.: Latin.
Pro rata —In proportion: Latin.	Sine qua non —Without which not; an essential: Latin.	Virginibus puerisque —For girls and boys; the name of one of Stevenson's books: Latin.
Prosit —Your health, in drinking a toast: German.	Soi-disant —Self-styled; pretended: French.	Vis-à-vis —Face to face: French.
Pro tempore —For the time; frequently written pro tem.: Latin.	Status quo, or status quo ante —The existing or former condition: Latin.	Vita brevis, ars longa —Life is short, art is long: Latin.
Proximo —Next; generally written prox.: Latin.	Sturm und Drang —Storm and stress: German.	Viva voce —By oral testimony: Latin.
Quid pro quo —Literally, what for what; value for value, or value in return: Latin.	Suaviter in modo, fortiter in re —Gentle in manner, strong in action: Latin.	Vive la république —Long live the republic: French.
Qui s'excuse, s'accuse —He who excuses himself accuses himself: French.	Sub judice —Under consideration, or in course of trial: Latin.	Vive l'empereur —Long live the emperor: French.
Quod erat demonstrandum —Which was to be proved: Latin.	Sub pœna —Under a penalty: Latin.	Voilà —There is: French.
Quod erat faciendum —Which was to be done: Latin.	Sub rosa —Under the rose; privately: Latin.	Volente Deo —God willing: Latin.
		Volo, non valeo —I am willing, but unable: Latin.
		Vox populi, vox Dei —The voice of the people is the voice of God: Latin.

THE BOOK OF SCHOOL LESSONS IS NOW ENDED.

WHY A KITE KEEPS UP IN THE AIR



The air above the earth is in layers of different densities, and these are constantly moving in a horizontal direction. The string of a kite is so placed that the air can beat against the face of the kite and preserve it at an angle that allows the bulk of the air current to glide downwards. But this air, meeting the dense air below, is pressed up against the kite, which, when it is pushed, moves where there is least resistance—namely, upward through the thinner air. And so the process is constantly repeated. If, however, the string is fixed in the wrong position, or is entangled, as with the lower kite, the kite is not maintained in its proper position, and it falls.



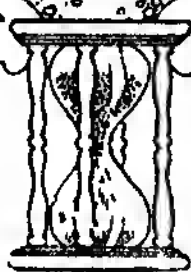
HOW HIGH CAN MEN FLY?

WHEN aero-planes were first made, it was thought that a flying machine which carried a man could fly only very near the ground. For one thing it was thought safer to do so. For another it might be expected that near the ground the changes in wind would be less, and as even very young people can remember, in the early days an aviator did not dare to go into the air if the wind blew. Another important reason was that the air is denser near the ground, and therefore less power is needed to keep the aeroplane up in a low flight than in the rarer air higher up. However, as aeroplanes were improved, and engineers learned to make engines that are at the same time light and powerful, aviators became more daring. Battle planes carrying two men and two guns fly six or seven thousand feet from the ground. Lighter machines have gone up to the astonishing height of nearly twenty-five thousand feet. A change of wind does not drive an aviator down from the upper air, and a wind storm does not prevent him from going up. It has been found too that though the air is rarer in high regions, the currents are much smoother than they are lower down.

IS A BOX IN WHICH A CANDLE HAS BURNT LIGHTER THAN A BOX AND CANDLE?

When we burn the candle in the ordinary way it seems as if some-

CONTINUED FROM 5815



thing had been turned into nothing, because the matter of the candle disappears and there is nothing to show for it. If it were true that the candle turned into nothing when it was burned, we should be in the presence of an utter mystery without any meaning. But it is just such an experiment as this that gives us the key to what really happens when a candle burns, that explains to us why it disappears, and, what is much more important, teaches us that we are utterly wrong in supposing that when the candle disappears the matter which made it is destroyed.

When we weigh the box, to begin with, we have to reckon with the box, the candle, and the air in the box; but when we weigh it a second time, the box remains the same, but the candle inside has vanished. Yet the weight is the same, and this means that the air or mixture of gases inside the box is heavier, and heavier by the weight of the candle; no more and no less. The substance of the candle has combined with the gases of the air to form new gases. Nothing is lost, nothing is gained, and though there has been chemical change, we know that that does not affect gravitation, upon which weight depends.

WHY DOES A STICK SEEM TO BEND WHEN PUT INTO A POND?

We see a stick, as we see anything else, by the rays of light which come from it. These rays are governed by certain laws by which they travel. If

they possibly can, they travel in straight lines. And so, if the stick is straight and we see it from end to end through one and the same thing, as when it is held in still air or in still water, the stick appears to be straight. If the air or the water be moving, we may not see the stick straight; but we shall never see it straight if we put it half in the water.

We can see this for ourselves with a stick in a pond, or with a pencil, which is a kind of stick, in a tumbler of water, which is a kind of pond, or in many other cases. The bend that we notice always occurs at the surface of the water. We see it best if we raise the tumbler and look at it sideways. We then see half the stick through air and half through water. At least, that is what we might be inclined to say, but it is not quite the whole truth. We see the upper half of the stick through the air all the way, and there is nothing more to say about that; but if we think, we shall understand that the light from the lower half of the stick is traveling to our eyes first through water and then through air.

Now, the rule is that whenever light passes from one thing to another, as from water to air, or air to water, it is bent; and so, though the part of the stick under the water appears straight enough when the water is still, it is bent at an angle at the part above the water. This sharp bending of the rays of light in such cases is called refraction, which really means breaking.

HOW WAS IT DISCOVERED THAT THE SUN IS LARGER THAN THE EARTH?

There are many distinct ways which all help to teach us the size of such a body as the sun. Of course, when we use such a word as "larger," it ought to refer strictly to size, but we might also be thinking of the amount of stuff or matter in the sun; in other words, there is the question of volume and there is the question of mass, and the study of each helps the study of the other.

We can learn the size or volume of the sun by measuring the distance across its face. The mere measurement of the disc as it appears to us, however, would not, in itself, tell us any real fact: it would only convey the idea that the sun is about as large as the moon. But if we know the distance of the sun from us, we can work out its size from its

distance and the size of its face as it appears to us.

We can study the mass of the sun by applying our knowledge of the law of gravitation. Gravitation does not in the least concern itself with mere volume or size, but it concerns itself altogether with mass. When we know the law of gravitation, it will teach us the mass of any heavenly body of which the attractive power can be measured, because we know that that attractive power depends exactly upon the mass of the body in question, other things being equal. In this way the mass of the sun can be learned, and even the mass of dark stars, far away in space, of which we are able to know the existence only because the movements of other stars are seen to be disturbed by their gravitation.

WHY DO SOME NOTES IN MUSIC AGREE AND OTHERS MAKE A DISCORD?

It is now possible to count in each second the number of waves that make a musical note. When we study in this way the notes of a chord of two or more notes that agree and are harmonious, we find that the proportions between the numbers of waves in a second are always very simple. The chord that satisfies the ear best is made of notes that have, for instance, 400, 500, 600 and 800 waves in a second. It does not matter what the actual figures are at all, so long as the proportion between them is that between 4, 5, 6 and 8.

But a chord which we dislike and call a discord is made of notes that have, perhaps, these numbers of waves in a second—400, 477, 701, 835, or any other numbers that do not have a simple proportion to each other. Thus not very many harmonies are possible, but the possible number of discords is infinite. But discords are very useful in music, for they add enormously to the value of the harmonies and to our pleasure in them when they come.

DO THE WICKED NEARLY ALWAYS TRIUMPH IN THE WORLD?

All sorts of things have been said on this subject. For instance, it is said that "Honesty is the best policy," as if to mean that it is the best policy for this world, and that the honest man will always triumph over the knave. On the other hand, many men in certain kinds of business declare that it is quite impossible to make a living if one is honest.

They teach, indeed, that honesty is the worst policy in ordinary life. Ages ago the author of one of the Psalms declared that, though he was old, he had never seen the righteous forsaken, nor his children begging bread. In the modern world we see this every day, just as we also see righteousness prospering. And we see one dishonest man, perhaps, the richest man in the world, and another going to penal servitude for his dishonesty.

There is no rule. So many things, of such various kinds, make for triumph in this world that being good or bad may seem to work either way in turn. But goodness is worth while, because triumph in this world is worth nothing in itself, and goodness is worth everything in itself. So, in a higher and deeper sense of the word, honesty is the best policy.

AS PART OF THE WORLD FACES DOWN, WHY DOES NOT THE SEA FALL OUT?

This is a very natural question to ask until we remember what our earth is. It is a ball in space, with infinite distances on all sides of it. In these distances there are real directions, of course—there is north, toward which the North Pole of the earth points, and south, east, and west. These terms have real meanings, but so far as the great universe is concerned, up and down have no meanings at all. From our point of view, New Zealand is facing down, and it is always facing down, even though at 12 o'clock noon and 12 o'clock midnight we and it have changed places; and, from the point of view of New Zealand, we are always facing down. Each of us is just thinking of his relation to the earth, and our words have meaning simply and solely in relation to the centre of the earth.

Now, the centre of the earth is always down from New Zealand or from us at any time of day or night; and every part of the world faces up, for its face is turned away from the centre of the earth. The power of gravitation acts toward the centre of the earth, pulling everything down toward it. If we jump here the earth pulls us back; if a New Zealander jumps at the same time almost in the opposite direction, the earth pulls him back too.

When we think it out like this we can understand why the sea does not fall out at any part of the earth's surface, and why there is no more reason for it to do so at any one point than at any other.

WHY DOES WATER SPLASH WHEN IT DROPS ON THE GROUND?

In order to answer this question we must first know why water forms drops at all. The answer is that there is a force called cohesion—or sticking together—which acts between the little molecules of the water, and holds them together in the round form that makes a drop. Now, when the drop falls upon the ground it is broken up, and this can only mean that something has overcome the force of cohesion between the drops, and has pulled them apart with a greater force than that which held them together.

This force is to be found in the motion of the drop as it fell. When the motion of the drop is arrested, it cannot be lost or destroyed; it must turn into something. If the water had sufficient cohesion, and were elastic, the motion would be turned into motion in the opposite direction—the drop would bounce. But, instead of that, the force of the drop's motion is turned into the force that overcomes its cohesion and drives its different parts asunder.

WHAT MAKES THE WATER DRY UP IN HOT WEATHER?

Whenever water or anything else disappears we know that it has not been made into nothing or destroyed, but has gone somewhere. In this case it is very easy to say where the water has gone. It has gone into the air; and exactly as the plate or the ground or whatever the water left is drier, so the air is wetter.

Our question then is, why does the water go into the air, and why especially in hot weather? Whenever water is exposed to an atmosphere that does not already contain as much water as it can hold, the water passes into the air in the form of water-vapor. We say that it evaporates. And the hotter the air is the more water will it hold, though so long as the air does not contain as much water as it can hold, water will evaporate at all temperatures.

Now, if anything happens to lower the temperature of the air when it is as full, or nearly as full, of water-vapor as it can be, the reverse of what happened before takes place, and the water comes out of the air, perhaps as dew, or as rain. And now we see why this may happen in hot as well as cold weather—that is, why it may rain in summer, as we all have opportunities of noticing every year.

**WHY DOES AN EAR OF CORN HAVE
A SILK TASSEL?**

Let us go out into the field and pick a ripe ear of corn and examine all its different parts. We know that nothing that nature has made is useless, although we may not always be able to find out just what its use is. Let us see if we can tell what the silk tassel at the top of the corn plant was made for. You will notice that the ears of corn spring out of the side of the stalk, and that they are covered with husks to protect the kernels or seeds, and that a bunch of soft, silk threads hangs out of the end of the ear. At the top of the plant is the tassel, which is really the flower of the corn and which contains the pollen. The grains of corn on the ear are the seeds of this wonderful plant, and for every one of these silk threads at the end of the cob, there is a grain of corn. Now every seed or grain of corn must receive some of the pollen from the silk tassel at the top of the plant before it will grow. Can you guess how the pollen gets to the seed? It is the wind which does this important work. The wind shakes the tassel and blows the pollen on to the sticky silk threads beneath. Then in some wonderful way Nature carries the pollen to the seed or kernel of corn, and tells it that it is time to grow and develop into the large, juicy kernels which we all enjoy so much, and wait for with such impatience.

**WHAT IS A TOTEM
POLE?**

When we wish to talk about some person or some thing, it would be necessary to point to it or show it if we did not have a name for the person or thing. As explained on page 688, we have names for convenience more than for any other reason, but there was a time in the long ago, when people lived together in tribes, or clans, and the members of these great families did not have any name, but the whole family, or tribe, had a name or sign, and these people talked about themselves by means of their family sign. The North American Indian word "totem" means "family token," and each family set up a pole outside of the entrance to its home, called the "Totem Pole" or "Sign Pole." Usually a certain animal was painted or carved upon the pole, such as the bear, the turtle, the

crane or the beaver, and this same figure was often painted on the body or shown on the garments. An individual belonging to the tribe of the Bear might be called "Growling Bear" or "Fighting Bear" to distinguish him from others of the same tribe.

**WHY IS THERE LITTLE RAIN IN
PERU AND NORTHERN CHILE?**

You remember that in another part of the book we have told you about the trade winds, which were of so much importance to navigation in the old days of sailing vessels. These winds, as we know, are really currents of air rushing up toward the equator from the cold regions of the poles. The trade wind in the southern hemisphere is a southeasterly wind; that is, it blows from the southeast into the northwest. As it blows over the Atlantic Ocean, it gathers up a great deal of moisture, which falls in rain on the highlands of Brazil and in rain and snow on the eastern sides of the Andes, thus providing the water that fills the great rivers of the east. Of course you know that when a wind becomes cold the water vapor which it carries condenses and falls in rain or snow. But when our trade wind has reached the western slopes of the Andes it has no more moisture to give. It has lost all as it crossed the snow-laden peaks and has none left to give to the western mountain slopes, or the parched coastal plain. You remember, however, that a westerly wind blows off the Pacific, which gives plenty of rain to the coast of North America, and you wonder why this wind does not give moisture to the southern coast. It does in the south of Chile and in parts of Colombia and Ecuador, and it would do the same thing for the coast of northern Chile and Peru if it were not for the Humboldt current.

You know there are currents in the ocean as well as in the air. One of these—the Humboldt current—flows up from the cold Antarctic Ocean along the coast until it strikes the shoulder of the continent, and is swept out into the Pacific. This cold current chills the wind so that it cannot hold much moisture. But when the chill wind blows across the coast, it becomes a hot wind. The temperature of the air rises so that it is able to retain its moisture in the form of gas, and there is no rain.

THE NEXT QUESTIONS ARE ON PAGE 587.



"Will you come back to the farm now?" asked Olaf.

"Not yet," said the brownie. "We must travel the world together; and then—why, then I'll give those warming-pans a shine. It's a terribly long time since I was at them. Your father should have known better than to pay a brownie. He should have known that we work for love, and here I have been all these long years polishing a stone, and wearing out brooms on the rock, waiting for the child of the house to grow up and to find me. And you've come," said the brownie, dancing into the cave, to fetch a little wooden cage with a big cockchafer inside. He opened the cage and took the cockchafer on his finger.

"You've found me," said the brownie—"you've found me; and now there's nothing left but the travels. For I'm to do a deal for you, and you for me, before I can work in Orchard Farm. Fly, cockchafer," he cried—"fly fast and straight, and tell my brothers in the pine-wood by the sea. Tell them to launch the boat. Tell them we are coming—Olaf of Orchard Farm and I."

He let the cockchafer fly from his hand, and it boomed away in the still air of the summer night. An owl was calling in the valley. And Olaf heard the "krrrrrrrr" of a nightjar in the pine-woods. It might, he thought, be the brownies hammering on the boat.

And that is how Olaf of Orchard Farm found the brownie, and came to make his travels with him. And if I did not hear your mother coming to blow out the candles and tuck you into bed, you should hear to-night of how they sailed to the Glittering Harbor, where the Sultan's ships lay close together in the golden sunset, and how they won a wonderful horse, and how they found the white flower that can only be bought for love, like the brownie's services.

But that is why in Orchard Farm, although Olaf's father and mother are bent and old, and sit in the chimney corners, the kitchen floor is wonderfully scrubbed, and the pans shine brighter than those in any other kitchen of the countryside. And that is why Olaf, though he manages the farm now, and has married a king's daughter, goes always with her in the evenings to lay a saucer of milk beside the orchard wall.

"We can give him that, at least," says Olaf—"and as much love as we can spare him."

And the brownie scrubs the pans and polishes them till they shine and washes the dishes, and is very, very happy to know that he will never be paid in money for it.



Impasse—An insuperable obstacle; a sticking point: French.

Impedimenta—Luggage; army baggage: Latin.

Imperium in imperio—A state within a state: Latin.

In articulo mortis—At the point of death: Latin.

In camera—In private: Latin.

Incognito—Privately; under an assumed name; generally written *incog.*: Italian.

In Dei nomine—In the name of God; frequently written *I.D.N.*: Latin.

Index expurgatorius—List of forbidden books: Latin.

In Domino—In the Lord: Latin.

In extremis—At the point of death: Latin.

In forma pauperis—As a pauper: Latin.

Infra—Below; often written *inf.*: Latin.

In loco parentis—In the place of a parent: Latin.

In memoriam—In memory: Latin.

In pace—In peace: Latin.

In posse—Within the range of possibility: Latin.

In propria persona—In person: Latin.

In re—In the matter of; concerning: Latin.

In situ—In its original place: Latin.

In statu quo—In the former state: Latin.

Inter alia—Among other things: Latin.

Inter alios—Among other persons: Latin.

Inter nos—Between ourselves: Latin.

Inter se—Among themselves: Latin.

In toto—Entirely: Latin.

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Ipsissima verba—The very words: Latin.

Ipsó facto—Virtually: Latin.

Jeu de mots—A pun; literally, a play on words: French.

Jeu d'esprit—A witticism: French.

Labore et honore—By labor and honor: Latin.

Lapsus linguæ—Slip of the tongue: Latin.

Lares et penates—Household gods; used of household effects, such as furniture: Latin.

Laus Deo—Praise to God: Latin.

Le beau monde—The world of fashion: French.

Le grand monarque—The great monarch, Louis XIV.: French.

Le roi le veut—The king wills it; the words in which the King of Great Britain gives his assent to a Law passed by Parliament: Norman French.

Lèse majesté—Literally, injured majesty; an offence of disrespect constituting a mild form of treason: French.

L'état, c'est moi—I am the state; a saying of Louis XIV.: French.

Liberté, égalité, fraternité—Liberty, equality, fraternity; the motto of the French Republic: French.

Locum tenens—Literally, holding the place; a temporary substitute: Latin.

Locus standi—Standing place; right to interfere: Latin.

Loquitur—Speaks; frequently written *loq.*: Latin.

Ma chère—My dear: French.

Ma foi—My faith: French.

Magnum bonum—A great good: Latin.

Magnum opus—A great work: Latin.

Mal à propos—Unsuitable; out of place: French.

Mal de mer—Sea-sickness: French.

Mandamus—Literally, we command; used to indicate an order made by a higher court to a lower: Latin.

Materfamilias—The mother of a family: Latin.

Materia medica—The science that studies the remedies used in medicine: Latin.

Memorabilia—Things to be remembered: Latin.

Mens sana in corpore sano—A sound mind in a sound body: Latin.

Mésalliance—A marriage between two people of different social positions: French.

Meum et tuum—Mine and thine: Latin.

Mirabile dictu—Wonderful to tell: Latin.

Mirabilia—Wonderful things: Latin.

Mise en scène—Stage get-up: French.

Modus—Manner: Latin.

Modus operandi—Mode of operation: Latin.

Modus vivendi—Literally, a way of living; a settlement or compromise between opposite parties in a dispute: Latin.

Mon ami—My friend: French.

Mon cher—My dear: French.

Multum in parvo—Much in little: Latin.

Née—Born; the expression "Mrs. Smith née Jones" indicates that Jones was Mrs. Smith's name before marriage: French.

Nemine contradicente—With no one opposing; often written *nem. con.*: Latin.

Ne plus ultra—Nothing further: Latin.

Nil desperandum—Never despair: Latin.

Noblesse oblige—Rank has obligations: French.

Nolens volens—Willing or unwilling: Latin.

Nom de guerre—Literally, war name; assumed name: French.

Nom de plume—Literally, pen name; name assumed by a writer. The words are French, but the expression is not good French idiom: French.

Non compos mentis—Not of sound mind: Latin.

Non sequitur—A wrong conclusion: Latin.

Nota bene—Note well; usually written *N.B.*: Latin.

Notre Dame—Our Lady; the Virgin Mary: French.

Nouveaux riches—Newly rich; upstarts: French.

Nulli secundus—Second to none: Latin.

Obiit—He, or she, died: Latin.

Obiter—By the way: Latin.

Obiter dictum—A cursory remark (plural, *dicta*): Latin.

Octroi—Duties collected at the gates of a city or town: French.

Œil de bœuf—A bull's-eye; a small circular window: French.

Œuvres—Works: French.

Omnia vincit amor—Love conquers all: Latin.

On dit—They say; a flying rumor: French.

Ora et labora—Pray and work: Latin.

Ora pro nobis—Pray for us: Latin.

O tempora! O mores—Literally, Oh, times! Oh, manners! What sad times! What awful doings: Latin.

Pace tua—By your leave: Latin.

Par excellence—By excellence; superb: French.

Par exemple—For example: French.

Pari passu—Literally, with equal pace; together: Latin.

Parvenu—Literally, arrived; an upstart: French.

THE BOOK OF SCHOOL LESSONS

- Paterfamilias**—Father of a family: Latin.
- Pater patriæ**—Father of his country: Latin.
- Per annum**—By the year; frequently written *per an.*: Latin.
- Per centum**—By the hundred; also written *per cent.*, *p.c.*, or *%*: Latin.
- Pièce de résistance**—Literally, piece of or for resistance; the chief course at a dinner: French.
- Pied-à-terre**—Temporary lodging: French.
- Pinxit**—Painted: Latin.
- Pis aller**—Literally, worst go; a makeshift: French.
- Pleno jure**—With full powers: Latin.
- Pons asinorum**—Literally, the bridge of asses; usually applied to Euclid i. v.: Latin.
- Poste restante**—A department in a post-office where letters lie till called for by the person to whom they are addressed: French.
- Post mortem**—After death: Latin.
- Post obitum**—After death: Latin.
- Postscriptum**—Written after; generally written *p.s.*: Latin.
- Pot pourri**—A mixture of dried flowers: French.
- Pour prendre congé** or *p.p.c.*—To take leave: French.
- Presto**—Quick: Italian.
- Prima facie**—On the first view: Latin.
- Primo**—In the first place: Latin.
- Pro and con**—For and against: Latin.
- Pro forma**—As a matter of form: Latin.
- Pro patria**—For our country: Latin.
- Pro rata**—In proportion: Latin.
- Prosit**—Your health, in drinking a toast: German.
- Pro tempore**—For the time; frequently written *pro tem.*: Latin.
- Proximo**—Next; generally written *prox.*: Latin.
- Quid pro quo**—Literally, what for what; value for value, or value in return: Latin.
- Qui s'excuse, s'accuse**—He who excuses himself accuses himself: French.
- Quod erat demonstrandum**—Which was to be proved: Latin.
- Quod erat faciendum**—Which was to be done: Latin.
- Quod vide**—Which see; generally written *q.v.*: Latin.
- Quo vadis**—Whither goest thou: Latin.
- Raison d'être**—Reason for being: French.
- Rara avis**—A rare bird; a curiosity: Latin.
- Reductio ad absurdum**—Proof by proving the ridiculousness of the contrary: Latin.
- Répondez, s'il vous plaît**—Reply, if you please: French.
- Requiescat in pace**—May he rest in peace: Latin.
- Ruse de guerre**—Stratagem: French.
- Rus in urbe**—Country in the city: Latin.
- Sancta simplicitas**—Child-like simplicity: Latin.
- Sanctum sanctorum**—Holy of holies: Latin.
- Sang froid**—Literally, cold blood; indifference: French.
- Sans cérémonie**—Without ceremony; informal: French.
- Sans culottes**—Breechless; a name given to some agitators at the beginning of the French Revolution: French.
- Sans peur et sans reproche**—Without fear and without reproach; the phrase used to describe the Chevalier Bayard (about whom we have read): French.
- Sartor resartus**—The tailor reclothed; the name of a book by Carlyle: Latin.
- Savoir-faire**—Tact: French.
- Semper eadem, or semper idem**—Always the same: Latin.
- Sequentes, or sequentia**—The following; generally written *seq.*: Latin.
- Seriatim**—One after another: Latin.
- Sic transit gloria mundi**—Thus passes worldly glory: Latin.
- Sine die**—Without day; indefinitely; frequently written *s. d.*: Latin.
- Sine qua non**—Without which not; an essential: Latin.
- Soi-disant**—Self-styled; pretended: French.
- Status quo, or status quo ante**—The existing or former condition: Latin.
- Sturm und Drang**—Storm and stress: German.
- Suaviter in modo, fortiter in re**—Gentle in manner, strong in action: Latin.
- Sub judice**—Under consideration, or in course of trial: Latin.
- Sub poena**—Under a penalty: Latin.
- Sub rosa**—Under the rose; privately: Latin.
- Sub voce**—Under the word; as, for example, under the word in a dictionary or encyclopædia: Latin.
- Sui generis**—Of its own species; peculiar: Latin.
- Summum bonum**—The highest good: Latin.
- Supra**—Above: Latin.
- Tableau vivant**—Living picture: French.
- Tempus fugit**—Time flies: Latin.
- Terra incognita**—An unknown country: Latin.
- Tête-à-tête**—Literally, head to head; a private conversation between two: French.
- Tour de force**—A feat: French.
- Tu quoque, Brute**—And thou, too, Brutus; the same as *et tu, Brute*: Latin.
- Ultima thule**—The farthest boundary: Latin.
- Ultimo**—last; usually written *ult.*: Latin.
- Ultra vires**—Beyond one's power: Latin.
- Vade mecum**—Go with me; a constant companion: Latin.
- Veni, vidi, vici**—I came, I saw, I conquered; Caesar's famous saying: Latin.
- Verbum sapienti sat est**—A word to the wise man is sufficient; often contracted to *verb. sap.*: Latin.
- Versus**—Against; often written *v.*: Latin.
- Via**—By way of: Latin.
- Via media**—A middle course: Latin.
- Vice**—In place of: Latin.
- Vice versa**—Transposed: Latin.
- Videlicet**—Namely; usually written *viz.*: Latin.
- Virginibus puerisque**—For girls and boys; the name of one of Stevenson's books: Latin.
- Vis-à-vis**—Face to face: French.
- Vita brevis, ars longa**—Life is short, art is long: Latin.
- Viva voce**—By oral testimony: Latin.
- Vive la république**—Long live the republic: French.
- Vive l'empereur**—Long live the emperor: French.
- Voilà**—There is: French.
- Volente Deo**—God willing: Latin.
- Volo, non valeo**—I am willing, but unable: Latin.
- Vox populi, vox Dei**—The voice of the people is the voice of God: Latin.

THE BOOK OF SCHOOL LESSONS IS NOW ENDED.

WHY A KITE KEEPS UP IN THE AIR



The air above the earth is in layers of different densities, and these are constantly moving in a horizontal direction. The string of a kite is so placed that the air can beat against the face of the kite and preserve it at an angle that allows the bulk of the air current to glide downwards. But this air, meeting the dense air below, is pressed up against the kite, which, when it is pushed, moves where there is least resistance—namely, upward through the thinner air. And so the process is constantly repeated. If, however, the string is fixed in the wrong position, or is entangled, as with the lower kite, the kite is not maintained in its proper position, and it falls.



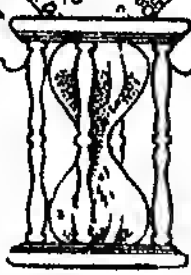
HOW HIGH CAN MEN FLY?

WHEN aero-planes were first made, it was thought that a flying machine which carried a man could fly only very near the ground. For one thing it was thought safer to do so. For another it might be expected that near the ground the changes in wind would be less, and as even very young people can remember, in the early days an aviator did not dare to go into the air if the wind blew. Another important reason was that the air is denser near the ground, and therefore less power is needed to keep the aeroplane up in a low flight than in the rarer air higher up. However, as aeroplanes were improved, and engineers learned to make engines that are at the same time light and powerful, aviators became more daring. Battle planes carrying two men and two guns fly six or seven thousand feet from the ground. Lighter machines have gone up to the astonishing height of nearly twenty-five thousand feet. A change of wind does not drive an aviator down from the upper air, and a wind storm does not prevent him from going up. It has been found too that though the air is rarer in high regions, the currents are much smoother than they are lower down.

IS A BOX IN WHICH A CANDLE HAS BURNT LIGHTER THAN A BOX AND CANDLE?

When we burn the candle in the ordinary way it seems as if some-

CONTINUED FROM 5815



thing had been turned into nothing, because the matter of the candle disappears and there is nothing to show for it. If it were true that the candle turned into nothing when it was burned, we should be in the presence of an utter mystery without any meaning. But it is just such an experiment as this that gives us the key to what really happens when a candle burns, that explains to us why it disappears, and, what is much more important, teaches us that we are utterly wrong in supposing that when the candle disappears the matter which made it is destroyed.

When we weigh the box, to begin with, we have to reckon with the box, the candle, and the air in the box; but when we weigh it a second time, the box remains the same, but the candle inside has vanished. Yet the weight is the same, and this means that the air or mixture of gases inside the box is heavier, and heavier by the weight of the candle; no more and no less. The substance of the candle has combined with the gases of the air to form new gases. Nothing is lost, nothing is gained, and though there has been chemical change, we know that that does not affect gravitation, upon which weight depends.

WHY DOES A STICK SEEM TO BEND WHEN PUT INTO A POND?

We see a stick, as we see anything else, by the rays of light which come from it. These rays are governed by certain laws by which they travel. If

they possibly can, they travel in straight lines. And so, if the stick is straight and we see it from end to end through one and the same thing, as when it is held in still air or in still water, the stick appears to be straight. If the air or the water be moving, we may not see the stick straight; but we shall never see it straight if we put it half in the water.

We can see this for ourselves with a stick in a pond, or with a pencil, which is a kind of stick, in a tumbler of water, which is a kind of pond, or in many other cases. The bend that we notice always occurs at the surface of the water. We see it best if we raise the tumbler and look at it sideways. We then see half the stick through air and half through water. At least, that is what we might be inclined to say, but it is not quite the whole truth. We see the upper half of the stick through the air all the way, and there is nothing more to say about that; but if we think, we shall understand that the light from the lower half of the stick is traveling to our eyes first through water and then through air.

Now, the rule is that whenever light passes from one thing to another, as from water to air, or air to water, it is bent; and so, though the part of the stick under the water appears straight enough when the water is still, it is bent at an angle at the part above the water. This sharp bending of the rays of light in such cases is called refraction, which really means breaking.

HOW WAS IT DISCOVERED THAT THE SUN IS LARGER THAN THE EARTH?

There are many distinct ways which all help to teach us the size of such a body as the sun. Of course, when we use such a word as "larger," it ought to refer strictly to size, but we might also be thinking of the amount of stuff or matter in the sun; in other words, there is the question of volume and there is the question of mass, and the study of each helps the study of the other.

We can learn the size or volume of the sun by measuring the distance across its face. The mere measurement of the disc as it appears to us, however, would not, in itself, tell us any real fact: it would only convey the idea that the sun is about as large as the moon. But if we know the distance of the sun from us, we can work out its size from its

distance and the size of its face as it appears to us.

We can study the mass of the sun by applying our knowledge of the law of gravitation. Gravitation does not in the least concern itself with mere volume or size, but it concerns itself altogether with mass. When we know the law of gravitation, it will teach us the mass of any heavenly body of which the attractive power can be measured, because we know that that attractive power depends exactly upon the mass of the body in question, other things being equal. In this way the mass of the sun can be learned, and even the mass of dark stars, far away in space, of which we are able to know the existence only because the movements of other stars are seen to be disturbed by their gravitation.

WHY DO SOME NOTES IN MUSIC AGREE AND OTHERS MAKE A DISCORD?

It is now possible to count in each second the number of waves that make a musical note. When we study in this way the notes of a chord of two or more notes that agree and are harmonious, we find that the proportions between the numbers of waves in a second are always very simple. The chord that satisfies the ear best is made of notes that have, for instance, 400, 500, 600 and 800 waves in a second. It does not matter what the actual figures are at all, so long as the proportion between them is that between 4, 5, 6 and 8.

But a chord which we dislike and call a discord is made of notes that have, perhaps, these numbers of waves in a second—400, 477, 701, 835, or any other numbers that do not have a simple proportion to each other. Thus not very many harmonies are possible, but the possible number of discords is infinite. But discords are very useful in music, for they add enormously to the value of the harmonies and to our pleasure in them when they come.

DO THE WICKED NEARLY ALWAYS TRIUMPH IN THE WORLD?

All sorts of things have been said on this subject. For instance, it is said that "Honesty is the best policy," as if to mean that it is the best policy for this world, and that the honest man will always triumph over the knave. On the other hand, many men in certain kinds of business declare that it is quite impossible to make a living if one is honest.

They teach, indeed, that honesty is the worst policy in ordinary life. Ages ago the author of one of the Psalms declared that, though he was old, he had never seen the righteous forsaken, nor his children begging bread. In the modern world we see this every day, just as we also see righteousness prospering. And we see one dishonest man, perhaps, the richest man in the world, and another going to penal servitude for his dishonesty.

There is no rule. So many things, of such various kinds, make for triumph in this world that being good or bad may seem to work either way in turn. But goodness is worth while, because triumph in this world is worth nothing in itself, and goodness is worth everything in itself. So, in a higher and deeper sense of the word, honesty is the best policy.

AS PART OF THE WORLD FACES DOWN, WHY DOES NOT THE SEA FALL OUT?

This is a very natural question to ask until we remember what our earth is. It is a ball in space, with infinite distances on all sides of it. In these distances there are real directions, of course—there is north, toward which the North Pole of the earth points, and south, east, and west. These terms have real meanings, but so far as the great universe is concerned, up and down have no meanings at all. From our point of view, New Zealand is facing down, and it is always facing down, even though at 12 o'clock noon and 12 o'clock midnight we and it have changed places; and, from the point of view of New Zealand, we are always facing down. Each of us is just thinking of his relation to the earth, and our words have meaning simply and solely in relation to the centre of the earth.

Now, the centre of the earth is always down from New Zealand or from us at any time of day or night; and every part of the world faces up, for its face is turned away from the centre of the earth. The power of gravitation acts toward the centre of the earth, pulling everything down toward it. If we jump here the earth pulls us back; if a New Zealander jumps at the same time almost in the opposite direction, the earth pulls him back too.

When we think it out like this we can understand why the sea does not fall out at any part of the earth's surface, and why there is no more reason for it to do so at any one point than at any other.

WHY DOES WATER SPLASH WHEN IT DROPS ON THE GROUND?

In order to answer this question we must first know why water forms drops at all. The answer is that there is a force called cohesion—or sticking together—which acts between the little molecules of the water, and holds them together in the round form that makes a drop. Now, when the drop falls upon the ground it is broken up, and this can only mean that something has overcome the force of cohesion between the drops, and has pulled them apart with a greater force than that which held them together.

This force is to be found in the motion of the drop as it fell. When the motion of the drop is arrested, it cannot be lost or destroyed; it must turn into something. If the water had sufficient cohesion, and were elastic, the motion would be turned into motion in the opposite direction—the drop would bounce. But, instead of that, the force of the drop's motion is turned into the force that overcomes its cohesion and drives its different parts asunder.

WHAT MAKES THE WATER DRY UP IN HOT WEATHER?

Whenever water or anything else disappears we know that it has not been made into nothing or destroyed, but has gone somewhere. In this case it is very easy to say where the water has gone. It has gone into the air; and exactly as the plate or the ground or whatever the water left is drier, so the air is wetter.

Our question then is, why does the water go into the air, and why especially in hot weather? Whenever water is exposed to an atmosphere that does not already contain as much water as it can hold, the water passes into the air in the form of water-vapor. We say that it evaporates. And the hotter the air is the more water will it hold, though so long as the air does not contain as much water as it can hold, water will evaporate at all temperatures.

Now, if anything happens to lower the temperature of the air when it is as full, or nearly as full, of water-vapor as it can be, the reverse of what happened before takes place, and the water comes out of the air, perhaps as dew, or as rain. And now we see why this may happen in hot as well as cold weather—that is, why it may rain in summer, as we all have opportunities of noticing every year.

WHY DOES AN EAR OF CORN HAVE A SILK TASSEL?

Let us go out into the field and pick a ripe ear of corn and examine all its different parts. We know that nothing that nature has made is useless, although we may not always be able to find out just what its use is. Let us see if we can tell what the silk tassel at the top of the corn plant was made for. You will notice that the ears of corn spring out of the side of the stalk, and that they are covered with husks to protect the kernels or seeds, and that a bunch of soft, silk threads hangs out of the end of the ear. At the top of the plant is the tassel, which is really the flower of the corn and which contains the pollen. The grains of corn on the ear are the seeds of this wonderful plant, and for every one of these silk threads at the end of the cob, there is a grain of corn. Now every seed or grain of corn must receive some of the pollen from the silk tassel at the top of the plant before it will grow. Can you guess how the pollen gets to the seed? It is the wind which does this important work. The wind shakes the tassel and blows the pollen on to the sticky silk threads beneath. Then in some wonderful way Nature carries the pollen to the seed or kernel of corn, and tells it that it is time to grow and develop into the large, juicy kernels which we all enjoy so much, and wait for with such impatience.

WHAT IS A TOTEM POLE?

When we wish to talk about some person or some thing, it would be necessary to point to it or show it if we did not have a name for the person or thing. As explained on page 688, we have names for convenience more than for any other reason, but there was a time in the long ago, when people lived together in tribes, or clans, and the members of these great families did not have any name, but the whole family, or tribe, had a name or sign, and these people talked about themselves by means of their family sign. The North American Indian word "totem" means "family token," and each family set up a pole outside of the entrance to its home, called the "Totem Pole" or "Sign Pole." Usually a certain animal was painted or carved upon the pole, such as the bear, the turtle, the

crane or the beaver, and this same figure was often painted on the body or shown on the garments. An individual belonging to the tribe of the Bear might be called "Growling Bear" or "Fighting Bear" to distinguish him from others of the same tribe.

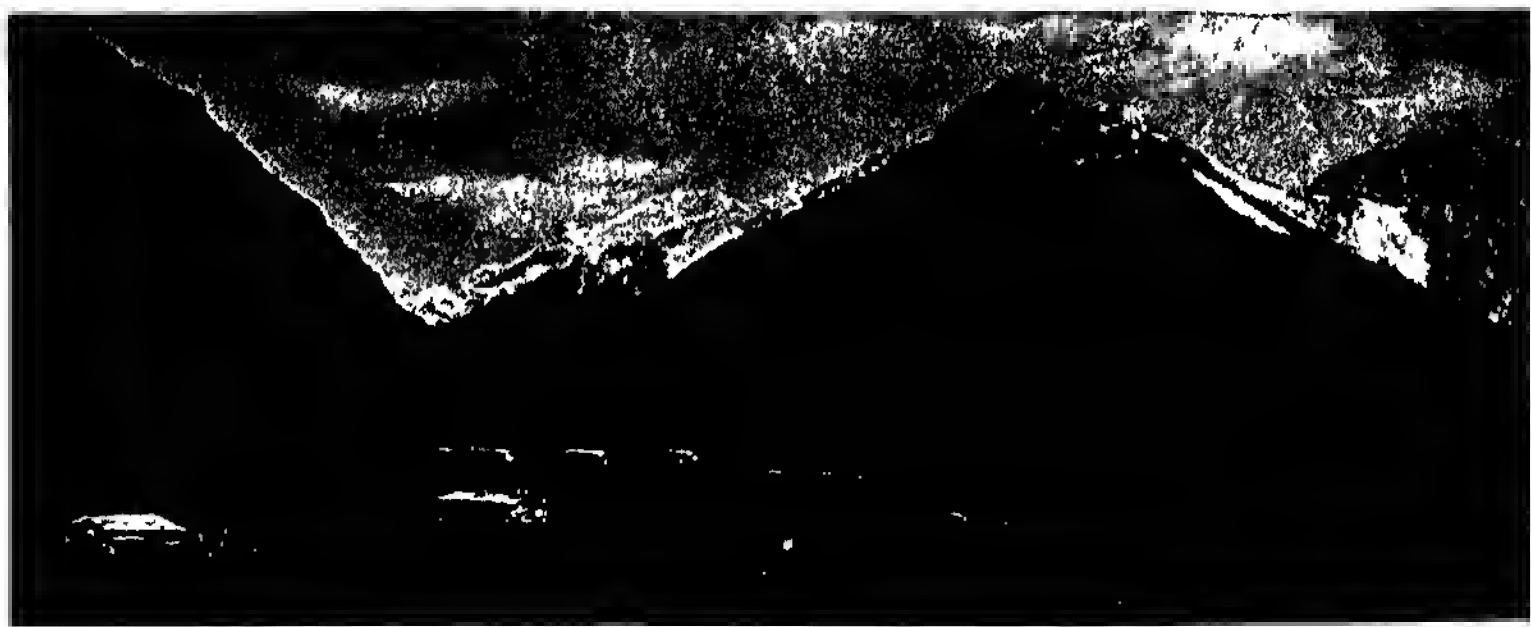
WHY IS THERE LITTLE RAIN IN PERU AND NORTHERN CHILE?

You remember that in another part of the book we have told you about the trade winds, which were of so much importance to navigation in the old days of sailing vessels. These winds, as we know, are really currents of air rushing up toward the equator from the cold regions of the poles. The trade wind in the southern hemisphere is a southeasterly wind; that is, it blows from the southeast into the northwest. As it blows over the Atlantic Ocean, it gathers up a great deal of moisture, which falls in rain on the highlands of Brazil and in rain and snow on the eastern sides of the Andes, thus providing the water that fills the great rivers of the east. Of course you know that when a wind becomes cold the water vapor which it carries condenses and falls in rain or snow. But when our trade wind has reached the western slopes of the Andes it has no more moisture to give. It has lost all as it crossed the snow-laden peaks and has none left to give to the western mountain slopes, or the parched coastal plain. You remember, however, that a westerly wind blows off the Pacific, which gives plenty of rain to the coast of North America, and you wonder why this wind does not give moisture to the southern coast. It does in the south of Chile and in parts of Colombia and Ecuador, and it would do the same thing for the coast of northern Chile and Peru if it were not for the Humboldt current.

You know there are currents in the ocean as well as in the air. One of these—the Humboldt current—flows up from the cold Antarctic Ocean along the coast until it strikes the shoulder of the continent, and is swept out into the Pacific. This cold current chills the wind so that it cannot hold much moisture. But when the chill wind blows across the coast, it becomes a hot wind. The temperature of the air rises so that it is able to retain its moisture in the form of gas, and there is no rain.

THE NEXT QUESTIONS ARE ON PAGE 585.

The Book of FAMILIAR THINGS



The top of the Ural Mountains, where the tip of a fountain pen comes from.

WHAT LIES BEHIND YOUR PEN

YOU pick up your pen to write a letter and put it down again, and perhaps, except for the words that it writes, it has never said a word to you. Yet a pen, which has been in the history of the world mightier than the sword, has in it something of the elements of which the world is made, something of the busy life of a great workshop, and something of the quiet feeling of a library.

Most of us use the fountain pen to-day though the quill pen is still used by a few old-fashioned people. Our fountain pen is new, but parts of it are older than the first bird on which feathers for quill pens grew. Its nib is of gold, an ancient metal, the search for which has led men to open up distant lands which, but for gold, might still be desert wastes. The nib is not all gold; it has a tip of iridium. This is a rare and costly metal won from the steeps of the Ural Mountains, and is of enormous age. It tips the pen which writes a letter that we send across the world; it tips the compass that guides the ship carrying the letter; it tips the contact-points of the telegraph which bears the message that the ship with our letter is coming.

The barrel of our fountain pen has a distinction that we may never have thought of—it is both vegetable and mineral. It comes partly from a great forest, partly from the crater of a volcano. The barrel is made of vulcanite,

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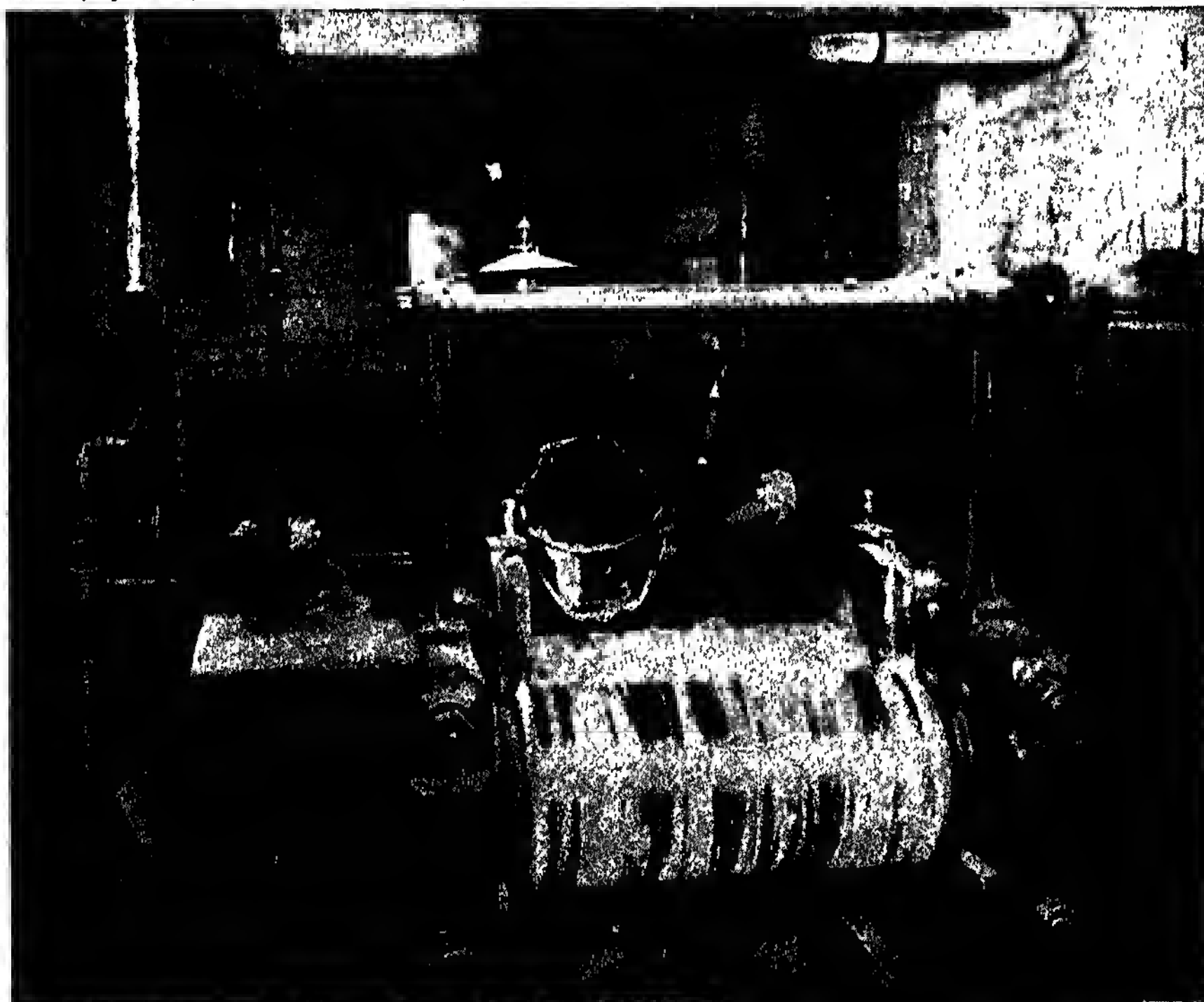
or ebonite which is rubber made hard by the addition of sulphur. You may read elsewhere how an inventor found out how to make rubber hard.

As early as 1835 fountain pens were made in England, but in most of them the ink supply was bad and irregular. When the writer needed fresh ink he had either to press a projecting button, turn a nut, or loosen a spring. In 1884 a patent was granted to L. E. Waterman for a self-acting underfeed pen. Under this pen ran a small rubber bar containing a groove and three fine slits at the bottom. Modern pens are based on the same principle. Let us examine our fountain pen. It consists of four pieces of hard rubber and a gold pen. The handle containing the supply of ink is in two pieces, connected with a screw joint, so that it can be easily taken apart for filling. The gold pen is held in the point section of the barrel by a third piece of rubber, the feed bar, which also carries ink from the reservoir to the pen. As the ink is used, air fills up the barrel. During the act of writing the ink is drawn from the reservoir by what is called capillary attraction, about which we may read in the BOOK OF KNOWLEDGE, through the feed to the pen point. When we cease writing the flow stops, too. The fourth piece of rubber is the cap, which is needed to protect the pen and keep the ink from drying when not in use.

THE VERY BEGINNING OF A FOUNTAIN PEN



Most of us use fountain pens. In making one of these, india-rubber is used, and this has first of all to be washed by hand, as shown on the left, and then ground between corrugated rollers, as on the right.



The rubber is then passed several times between heated steel rollers, upon which sulphur is constantly being poured, and the sulphur mixes with the rubber. From this mixture the barrels and caps are made.

HOT STEEL RODS TO MAKE THE BARREL



The rubber is rolled into a thin sheet as shown in this picture, which, with the other pictures on these pages, was taken in the factory where the famous Waterman pens are made. It is then cut into strips.



On the left we see a workman rolling the rubber round hot steel rods to make barrels for the pens ; on the right the work is being done by machine. The barrels are forced out in a continuous string.

CUTTING AND SMOOTHING THE BARRELS



The rubber on each rod is covered with tinfoil to keep it in shape. The rods are then placed in ovens with more sulphur, after which the steel rods are withdrawn, and the tubes cut by a revolving saw.



The tinfoil is next scraped off on a lathe, as shown on the left, and on another lathe the inside of the tube, or barrel, is cut smooth, as seen on the right. Afterwards, the screw thread is cut on the barrel.

A PEN NIB WORTH ITS WEIGHT IN GOLD



The nib of a fountain pen is of gold, and the man in the picture on the left is melting gold and mixing it with silver and copper to harden it. After it has been cooled in molds, it is rolled into thin strips.

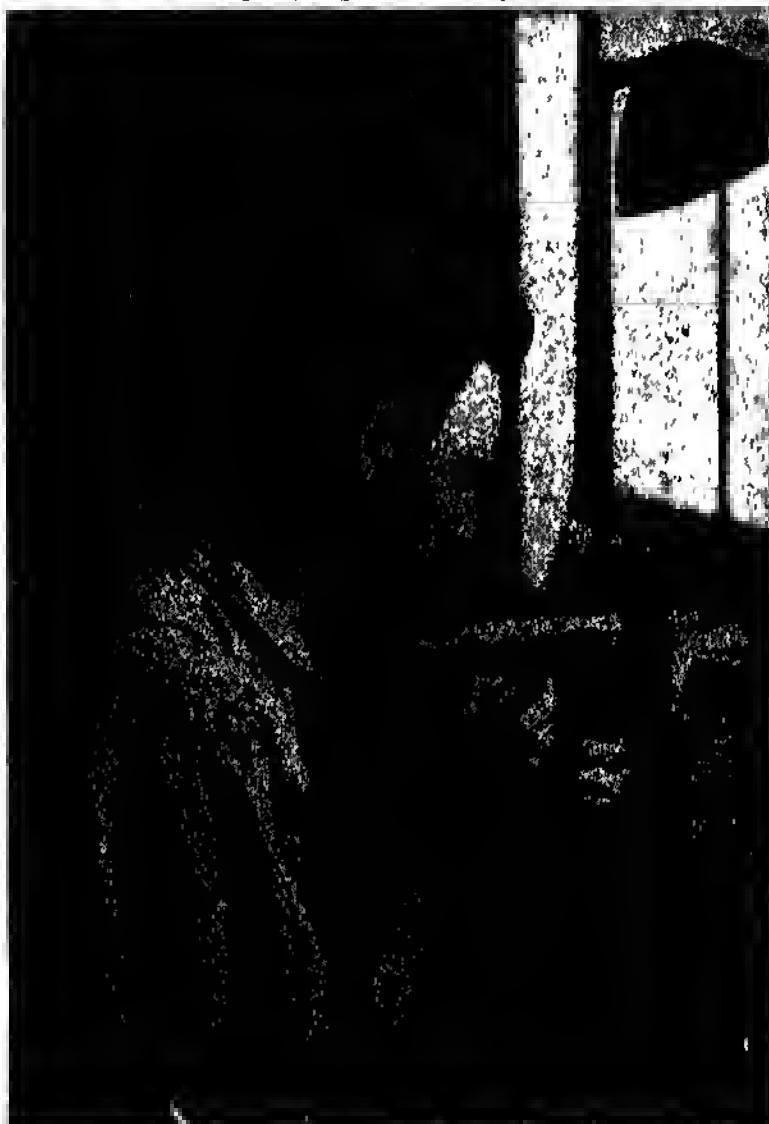


The flat shapes for the nibs are then stamped out by a machine like that which this man is working. A groove is made at the tip, so a point of iridium can be joined on. Iridium is a hard metal that wears well.

PEN POINTS FROM THE MOUNTAIN TOPS



The points are placed by hand on the tips of gold nibs for the best pens, and afterwards fused on. The man uses a magnifying glass in putting on the tiny point. The nib is then rolled, slit, and burnished.

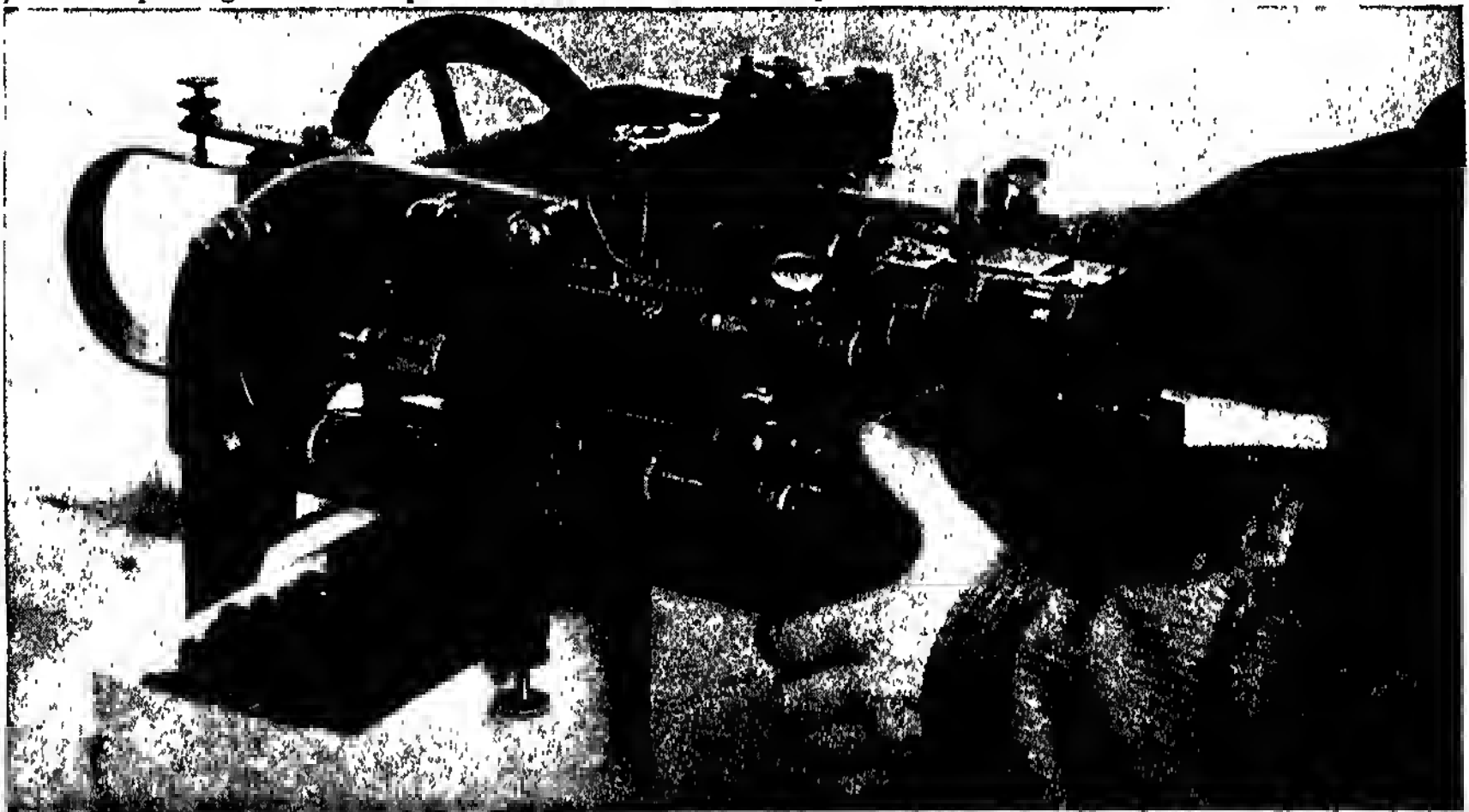


The man on the left is grinding the point of the nib. This is a very important and delicate operation, and upon it depends the usefulness of the pen. After the grinding, the nib is handed to the polisher.

THE PEN IS READY TO MEET THE PAPER



After the barrel has been smoothed and the screw-thread cut upon it and upon the nib-holder, the two parts are put together and tapered as shown in the first picture on the left. The pen is then polished.



The name is next printed on the barrel, and then this machine chases the barrel with the design so familiar to users of this particular make. The cutting is done by means of tiny diamond points.



The gold ribs and the little feed rods that carry the ink to the nib are then fitted into the barrels as shown on the left, and after the pen has been finally tested, as shown on the right, it is ready for use.

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HIS MAJESTY OF THE DESERT—THE KING OF BEASTS GOES FOR A WALK



Night is the working time of the king of beasts, but often the lion will wake up in the day and romp with his family. In this picture we see the lion taking a walk. On such a walk, especially if the day be gloomy, the lion will fill the air with his cries, and make the country resound with the roar that brings terror to man and beast.

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The Book of NATURE



A DAY IN A LION'S LIFE

WHEN we speak of a day in a lion's life, we must take the whole twenty-four hours, for night is the working time of the king of beasts. He is not one of the home-making animals of which we have read. He loves marshy country where there is abundance of long reeds or high grass, in which he can crouch. But he is also found in the desert, in which he is happy if he can find the shelter of a rock, or a thick, thorny bush, where he can sleep away the sunlight without being disturbed. He is not lazy, unless overfed. During the day he may wake up and have a romp with his wife and children, while if the day is cloudy and overcast he will roar from time to time, but not with the same violence as at night.

The day passes, the sun sinks from sight, night descends upon the earth. The lion gets up and lopes off from his lair out into the open. He can see well in the dark; nearly all animals and many wild birds can. The only thing he really fears is man. Therefore, our lion feels himself king of the night.

As he walks or trots along, he puts his head low, brings his mouth almost to the earth, and roars. A music

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master ought to love a lion, because it is such a master of the art of increasing and decreasing sound. There is no sheet of music printed for lions bearing the words crescendo and diminuendo to tell them when to increase their note and when to make it gradually softer. But the lion knows how to do it without printed instructions. The first roar is comparatively soft, the second is louder, the third is louder still, and the fourth makes the very earth tremble. The sound of later roars gradually grows less, ending off almost in a sigh. The beast's habit of putting its head low makes the sound travel far along the ground.

The roar of one lion calls forth the roars of others. Men lying out in camps tremble with fear; wild animals out feeding are struck with panic and gallop hither and thither, not knowing which way to escape the danger which threatens them. As likely as not some frightened antelope will gallop right into the jaws of a lion, or so near to him that he has but to spring to capture it.

If he has to make a choice of food, he will prefer a zebra, because that animal's flesh is covered with soft fat which the lion loves. Next to the

zebra he would prefer a dead hippopotamus, which is still fatter. He will not attack a live hippopotamus, for that monster, though peaceful enough, is much too strong for a lion to pull down. Next in favor will come either a giraffe or an antelope. He likes the flesh of the buffalo, but buffaloes are very fierce fighters, and can actually at times kill a lion.

Should all these fail, then there are the domestic animals of men. We will say nothing about man himself, for the lions which deliberately attack men without being first attacked are rare. Generally lions who attack man are old animals, whose teeth have become too worn to kill larger prey. When they become man-eaters, however, and especially if a young, strong lion learns this habit, they are more to be feared than all the other animals put together, the tiger alone excepted. Until they have been hunted down and killed, there is no safety for man in the neighborhood in which they live.

"Now for a zebra," says the lion. But the zebra knows its danger. It is up and feeding at night, with giraffes and gnus in its company. It knows as well as we do that there is no other animal which can hide its great body in such small space as the lion; that no other animal, when it springs, comes with such dreadful and unerring

force. So the zebra never goes near bush or grass or reeds large enough to conceal a lion. Therefore the lion has to conspire with its friends or family. The confederates hide in different places, and, springing out one after another, drive the zebra this way and that, until finally it comes near enough to be caught by the last hidden lion. A single bite from the lion, accompanied by a stroke from its great paw, and the sufferings of the zebra are ended, and the lion has its meal.

The lions which have thus combined to catch a zebra no sooner secure their prey than they quarrel over it, and often the rest will be driven away to seek other

food while the strongest remains to enjoy the meal. The lion eats his fill, then goes to a pool for water, drinks, and returns, just as the sun lights up the sky, to sleep

in peace. As he leaves the remains of the zebra or giraffe which he has killed, stealthy figures steal out of the shade. Jackals have come to eat what the lion has left. Generally the lion takes no notice of them, but if he has left much he may return

and drive off the jackals, so that there may remain a meal for himself for next day. The lion does not make a kill every night. Sometimes he has to fast, and the rest does him good. It is in the daytime chiefly that men meet the lion. They track him by his "spoor," or stumble



THE KING OF THE FOREST



WAITING FOR DINNER

THE LION IN SEARCH OF FOOD AND DRINK



A HUNGRY LION AND LIONESS WATCHING A CARAVAN PASSING ACROSS THE PLAIN



A THIRSTY LION AND LIONESS KEPT AT BAY BY A CROCODILE

The bottom picture is from a painting entitled "Forced Abstinence"; reproduced by permission of Messrs. C. E. Clifford & Co.

across him as he lies at rest, sleeping off the effects of his last meal, and send natives or dogs in to rouse him.

Out he goes very reluctantly. We are not at our best if roused for a crisis in the middle of the night, and the lion is at his worst when called up in the middle of a bright day after a heavy meal a few hours before. With a snarl and a roar he tries to get away. But he will kill a dog if pressed. Some lions, when wounded, try to escape, but others will turn and charge, though a hundred men be against him.

He is grandest and most terrible when the spear of a savage wounds him. The natives try to surround him. But he makes for the mass of them, and with every bite and with every blow of his

paw he kills a man or maims him for life. Generally, he will not attack man.

How is it that, as all animals drink at night, they do not meet the lion at the pool? We might expect that the lion, knowing the animals *must* drink, would lie in wait at the pools. But the animals would realize the danger there and desert that part of the country.

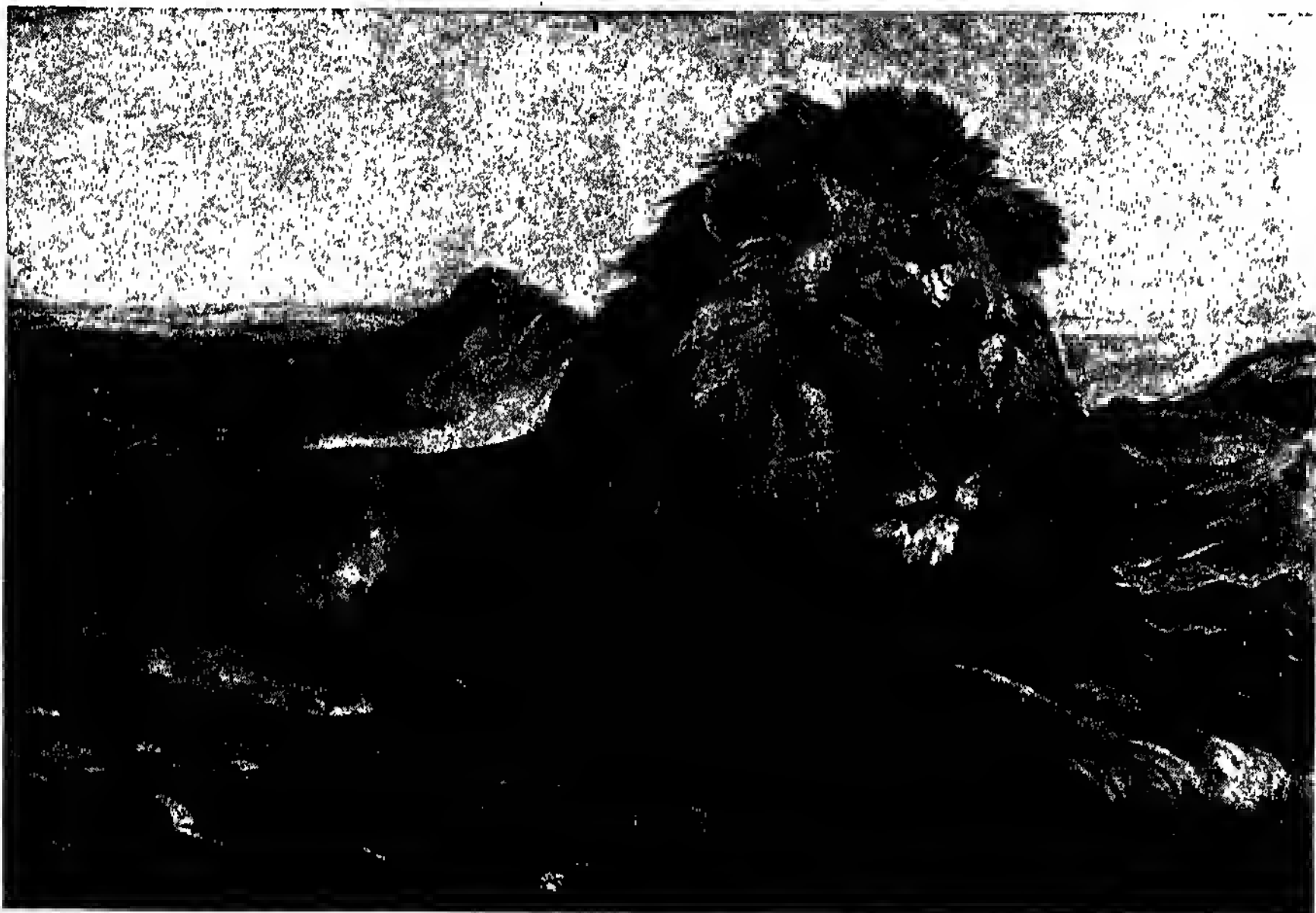
Young lions are at first very helpless. It is some months before they get teeth strong enough to

tear their food, and longer before they are strong or skilful enough to catch their prey alone. During this time they live with the old lions, who teach them carefully, but in two years they are quite grown, and ready to set up families of their own.

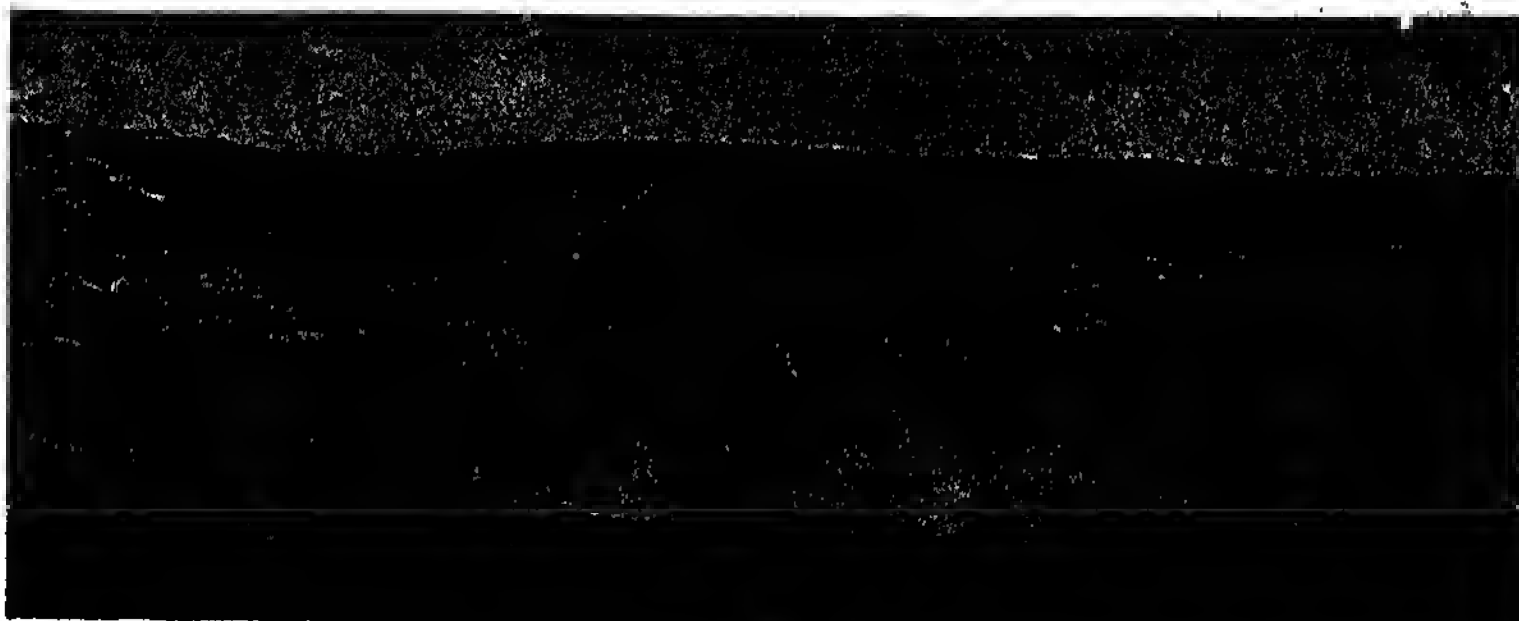
THE NEXT STORY OF NATURE IS ON PAGE 5997.



A PAIR OF YOUNG LION CUBS



A FINE LION RESTING AFTER A MEAL



WHERE DOES THE SAND COME FROM? THE STORY OF SAND, SHINGLE, AND SHELL

LET us take a bucket and spade on to the seashore and build castles with old rocks and mountains. Those little grains of sand which the waves dash hither and thither, which the wind fans away, which a trickle of water carries out to sea, are not older, for once upon a time they were merely as old as the hills; they are mountains and hills and rocks themselves.

Sand did not suddenly come into existence as sand. If we examine it under a microscope, we find that every grain of it is a separate piece of mineral matter. It was formed millions and millions of years ago. It may have been part of sandstone, which is so hard that men make grindstones of it to-day. Yet wind and frost and rain broke up the seemingly invincible sandstone into these tiny fragments, and carried it on the wings of the breeze, or on the bosom of rivers, down to the sea.

Again, our sand may have formed part of great rocks made up chiefly of quartz, felspar, and mica. We can guess at the astounding age of sand such as this, for the rocks into which it was formed could not have come into existence except at a depth of from 30,000 to 80,000 feet down in the earth. In the red-hot workshop, of the world these sands were formed, and, under enormous pressure fifteen

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miles deep in the earth, it was pressed into granite and gneiss.

Nature has no patent drills, no dynamite with which to blast, but she has her tools which bring these deep-hidden rocks to light. Her fiery heat thrusts up countries and continents, flings up mountains on the site of valleys, and so the buried rocks come into view, to be exposed to the wearing action of rain and heat and frost and wind. These powerful agents, which destroy one form of rock and grind it to powder, are capable of making mountains.

Worrying and gnawing, drilling and chafing, they keep cutting down the soft parts and carrying them away, so that the top and side covering of the granite is removed, and what was once a flat stretch, hidden in the earth, stands out at last as a towering height, overlooking a plain from which the upper layers have all been worn away.

As water finds the lowest level, all that is carried off by it must go with it to the lowest level, and the seashore is therefore the place to which the sand is carried. The sand of the shore is only a thin covering, though it seems a little world to us. It is like a layer of dust on a school desk. We need only to apply a duster or a puff of air. The dust vanishes, leaving the wood of the desk exposed. Sand is merely a layer of debris hiding the

rocks below. Along the margin the sand which has come from the hills and rocks collects.

There are great quantities of sand in the sea near the shore. Some of this is constantly being carried in by the waves, while other sand is carried out to sea. The sands are constantly changing, except where they are very sheltered. Sometimes the sand may drive too far inland, and buries buildings and fields and villages near the coast. This is not uncommon in some parts of our own country.

THE WAVES THAT FLING MASONRY ABOUT LIKE PEBBLES

More often, however, it rebels against the masterful sea, and actually masters that giant force. So much sand is brought in by the sea sometimes that it forms itself into hillocks or sand-dunes, and so firmly does it bind itself together that it forms a barrier against the sea which has brought it, and prevents the waves from coming in any farther.

But, as we know to our cost when we bare our feet to paddle, seashores are not always of sand. Too often they are of shingle. Well, the shingle has its history. Many of the stones have been washed in course of time out of the rocks standing by the sea. Still more, perhaps, came to the sea by slow stages, wrenched by ice from far-away hills and valleys.

Slowly, little by little, obeying the unswerving law of gravity, these pebbles were rolled onward to the sea. And there they have been, tossed hither and thither upon the shore. Storm-waves, which can fling about blocks of masonry as if they were corks, treat the pebbles like feathers, and hurl them into the air, so that lighthouse windows, standing high above high-water mark, are smashed by these relics of the mountains and valleys of a land that existed ages and ages before man.

THE ONCE LIVING WALLS OF THE SHORE

The rocks themselves, that stand boldly up, guardians of the coasts, tell us of the mighty changes that our world has seen. Some of them were formed in the fiery crucible of the earth, in the blazing heat wherein diamonds are born. Some of them are formed of metals and minerals combined. A bowl of starch which is a sticky fluid at this minute forms a sediment which in an hour will

be set hard. Many of our rocks were formed like the starch which solidifies at the bottom of the bowl. But, instead of an hour, it took millions of years to make the change. Some of the rocks were once living animals. Myriads and myriads of tiny shell-fish lived in a sea where the rocks now stand. We find them a thousand feet high in some hills to-day. The white walls of old England, the beautiful gleaming cliffs that all love, were living things once upon a time.

They lived and died. They took certain properties from the sea-water to form their "limy" or calcareous shells, and when they died their shells became converted into chalk to make the rocks and cliffs which are so wonderful.

THE WONDERFUL SHELLS OF WHICH ROCKS ARE MADE

A search in the sand will reveal hosts of these little shells to-day; but though they are of the loveliest shape and design, they are so tiny that we need the help of a microscope to see them. Of such little things are rocks and cliffs composed. Large shells there are, of course, for the searcher. They have all been habitations of various forms of life which people the sea.

There is not a beach in the land which does not yield a feast of delight for those who have eyes to see the wonders and beauties of these little marvels of creation. All the colors of the rainbow are represented in these dwellings of the humble, and man with all his skill cannot imitate them, so perfect are the tiny ones in shading and in form.

Then we think of the tiny snail-like thing that lived in it, and remember that the same properties in the sea which gave this little beauty its life, its shape and form and charm, give the mighty whale his bulk, speed, strength, and endurance, the shark his power and ferocity, the gorgeous fishes of the coral reefs their hues, and the sea itself its lovely meadows of weed, its lazy living sponges, and those marvelous anemones which mark the dividing line between plants and animals.

WHY DID BABY'S EYES CHANGE COLOR?

In order to understand this fully we should have to know a good deal about the structure of the eye, as well as about colors. But it is enough for our purpose here to say that the color of the eye depends upon a structure called the iris

—a kind of curtain made of delicate muscle-fibres which have the power of contracting and relaxing. In the middle of the curtain is a hole, called the pupil of the eye. When the colored curtain contracts, the pupil enlarges to allow more light to enter, or, when another set of muscle-fibres contract, the pupil narrows to shut out light.

The color of the curtain depends upon the kind and amount of coloring matter in its cells, and the way this color is arranged.

Now, this coloring matter is liable to change as life goes on, and it does change somewhat from birth, appearing less bright as time goes on, and being duldest in old age. We notice the change most in a baby's eyes because it appears more sudden in them.

WHY DOES COLD MAKE OUR HANDS BLUE?

Even in a healthy person we notice that the color does vary a good deal. The same person is sometimes red in the face as well as blue in the hands. So we might extend this question and ask: Why does the same person change color in different circumstances?

The color of the skin at any given moment depends upon the kind and amount of blood circulating in it at that moment. The blood is the great source of the color we notice in people. In the absence of enough blood the face and lips look white or pale, or anæmic, as we say, meaning bloodless. When there is a great rush of bright red blood to the surface, as when a person is taking violent exercise, the skin appears red from the expanding of the smallest arteries; when the skin is exposed to severe cold the arteries contract and contain less red blood, while the veins expand and contain more of the purplish, impure blood. Further, as the veins on the hands and limbs are nearer to the surface than the arteries, they are more easily seen, and the dark color of the blood shows through the skin over them, and gives a general bluish tint when the skin is cold. If the hands be now vigorously rubbed, or exercise be taken to stimulate the circulation, the blueness disappears, because the blood assumes its usual course once more.

WHY DOES A CAT ARCH ITS BACK ON MEETING A DOG?

It is difficult to be quite sure *why* animals do certain things, unless we

know whether they do them in their wild state. If we knew that a wild cat would arch its back on meeting a dog, we might safely presume that it is an instinct on the part of the cat which teaches it to take an attitude which may help it in self-defence. The attitude of the cat with its back arched, and its hair more or less bristling at the same time, might suggest to the dog an object of such ugliness as would terrify it; or one might suppose that the cat, in assuming this attitude, is attempting to get a firm grasp of the earth with its feet, so that, by thus stiffening its muscles, it could scratch its enemy with greater force and defend itself in that way.

But there is another explanation which may be more accurate. When a dog seizes a cat, it does so by the middle of the cat's body, and, by arching its back and bringing the two hind feet as near to the two fore feet as possible, the cat may be trying to protect this part of its body.

WHY CANNOT ELECTRICITY PASS THROUGH GLASS?

The shortest answer to this question would be to say that glass is a non-conductor of electricity. But what do we mean by a non-conductor? We mean a substance which will not allow a current of electricity to pass along or through it. This can be tested by an instrument called a galvanometer, which, when we pass an electric current through it, shows on a dial whether there is any current passing or not, and, if there is, how strong that current is. Two wires run from the instrument, and if their ends come together the dial shows that the current is passing. If, instead of this, we make the wires touch something else, we find that the current still passes in some cases, but not in others. Thus, if we take a coin and put the two wires in contact with it, the current passes. The coin, being metal, acts as a *conductor*. All metals are conductors. But if we take a piece of porcelain, or glass, and put the wires in contact with this, the instrument shows that no current is passing. These things, therefore, do not conduct electricity and are called *non-conductors*.

WHY DOES A MUTE DEADEN THE SOUND OF A VIOLIN?

Before we can understand this entirely, it is necessary to know what *sound* is, and also a little about the construction

of a violin. By sound we understand something that we can *hear*, and this is really the effect produced by the vibrations of some substance or other. These vibrations of the sounding substance enter the air and are carried to the organs of hearing, which carry them to the brain, and so make us conscious of the sound. No substance can make any sound unless it be put into a trembling, or vibrating, condition, so we may say that sound is the motion of vibration, impressed upon our senses.

A musical sound, like that from a violin, is caused by a regular series of exactly similar vibrations, succeeding each other at precisely equal intervals of time. The little implement known as a "mute" is made of wood, ivory, or brass, and when in position grasps the bridge of the violin. By compressing the bridge, the mute makes the vibration of the bridge less free, lessening also the vibration of the strings, so that the sound from them is made softer and altered in quality. The mute interferes with the production of the ordinary full vibrations, and so deadens the sound from the violin.

WHY SHOULD WE NOT EAT THE SKIN OF A PLUM?

The skin of a plum has nothing in it of much use to us as a food, so that it is not worth eating; and the skins of most fruits consist of chemical substances which we cannot digest, and that may, perhaps, cause us pain. But the best reason why we should not eat the skin of fruit is that it has been exposed to the air, and contains a host of microbes. It is probably right to say that the business of the skin is to protect the fruit from microbes.

WHAT MAKES A RIVER WIND?

We should naturally expect that a river would flow straight from its source in the high lands or mountains to the nearest point in the sea, and so it would if it had to flow over a perfectly smooth surface, composed of glass, or of anything else of the same structure throughout. But the water has to flow over the land, and this is by no means smooth all the way, nor is it of the same composition all the way. The river flows the *easiest* way. When it comes to an obstacle such as a rise in the ground, the water will be turned to one side and flow round the obstacle.

But, even when flowing through flat country, a river winds about, and this is because it washes away the soil from the softest parts of the surface and so makes a track for itself, which is followed by the water coming after. This is the "bed" of the river. Where the river comes to stone and rock, it flows over them until it reaches a softer part at the side, when it makes a track there.

WHY ARE THE RIVERS NEVER STILL?

A river is never still because of the great law of universal gravitation, which is that every particle of matter in the universe attracts every other particle with a force in the direction of a straight line joining the two. Now, as far as our earth is concerned, this means that the particles of the earth, and those of the water of a river, are thus acting towards each other, but the earth is the stronger, so to speak, and draws the water downwards to the lowest point.

That is to say, gravitation is acting in one direction, downwards, and this downward force of gravitation is what we mean by "weight." The particles of a river are always being attracted to the earth in this way, and so are always in motion, finally reaching the lowest level at the sea. The rivers, we may say, are always moving because they are always trying to reach the sea, which lies at the lowest possible level, or the nearest point to the centre of the earth, which water can reach.

WILL THE LAST MAN GASP FOR AIR?

It has been suggested that the oxygen of the air is being slowly used up, that the quantity of carbon dioxide is increasing, and that in the long run the carbon dioxide, which is comparatively heavy, will fill the valleys and low-lying places, so that men will have to climb out of them. And then, it might be supposed, the sea of carbon dioxide would gradually rise, driving men higher and higher for the oxygen they need, until at last the number of men would get fewer, and the last man would die of suffocation, gasping for air somewhere on the side of a high mountain.

But usually we find that when something in Nature appears to be going all in one direction, or to be coming to an end, there is something else which compensates for it. That is doubtless the

case with the oxygen and carbon dioxide of the air. When the quantity of carbon dioxide tends to rise, the sea absorbs the extra amount, so there is no fear of our being forced up the mountain-sides; and the green vegetable world is always making new oxygen from carbon dioxide. That is part of what is called the "balance of Nature."

WHY ARE ROSES RED?

This is a question which cannot be answered in a single sentence, for the redness of roses depends on many things, and not merely on the roses themselves. No rose is red in pure green light or in the dark; and in a pure red light a white rose is red. Plainly, therefore, we must study light as it reaches the rose from the sun.

We find that white light is a mixture including red. If any rose, or anything else that does not shine of itself, is illuminated by a light that does not contain red, that thing will not appear red. Roses do not shine of themselves, and therefore the first reason why roses are red is that there is red light in sunlight. But if there is red light in sunlight, why are some roses white and not all red?

The reason is that roses differ in their way of dealing with the sunlight that falls on them. Red rays, as well as all rays of other colors, fall upon a white rose; but it is not red, for it reflects to our eyes all the light that falls on it. As we have seen, if *only* red light falls on it it will be red, for it can only reflect that. But there is something in the red rose which causes it to behave differently with sunlight. Instead of reflecting all the rays that fall on it, it absorbs, or keeps to itself, all the rays that make up sunlight except the red ones. These it reflects to our eyes, and so we say it is a red rose.

WHY DO SOME THINGS BEND AND OTHERS BREAK?

This is a question which sounds as if it should be easy to answer, but really it is most difficult. All the questions about such things as bending and breaking, and stretching and brittleness, and so forth, are of the same kind, and the answers to them depend upon knowledge which we do not as yet possess.

We do not know what makes the parts of any solid thing stick together, and so we cannot possibly hope to explain such

facts as bending, brittleness, or elasticity. We can learn something by studying such things as sealing-wax, which will readily bend at times, and will break at other times. In this case we find that the temperature of the sealing-wax makes all the difference.

Such facts as these help us a little. The little parts, or molecules, that make them must be held together differently in different cases. In hot sealing-wax they behave as if they held each other with their arms relaxed, but in cold as if their arms were stiff. That is the only kind of idea we can form of this interesting question as yet.

IS THE BLOOD ALIVE?

As to whether blood is itself alive or not, the answer is both yes and no. Blood consists of a part which is certainly not alive, and of another part which is very much alive indeed. To our eyes, not helped by the microscope, blood is just a fluid, and a fluid cannot be alive. The fluid part of the blood is simply a mixture of a very large number of chemical compounds, food materials, salts, materials for poisoning microbes with, and so on. These are not alive, though our lives depend on them.

But in this fluid there swim unthinkable billions of living cells, so that the blood is certainly alive to that extent. In the blood of a healthy man there are more than five millions of such cells in a quantity about equal to two pins' heads, and the blood of a healthy woman contains nearly five millions in the same space. These cells are of various kinds, red and white. The white cells are, perhaps, almost the most intensely alive of any cells in the body.

WAS THE EARTH ALWAYS 93,000,000 MILES AWAY FROM THE SUN?

Always and never are very big words, and people who use them often are more bold than they are wise. There was not always a sun, nor was there always an earth. Each had its beginning, and there can be little doubt that they began in much the same way and at much the same time. Of late years we have begun to get clearer notions about it, especially because we have learned so much about the other planets of the solar system, what they are made of, how hot they are, and what is happening upon them.

It seems probable that the earth was

formed at about the same distance from the sun as we find that it is now. It was not exactly the same distance, and, indeed, the distance must be slowly changing now; but it seems more and more likely that not only the earth, but the other planets as well, were formed in space from the great nebula that existed before the solar system, at something like the same distances as they occupy now. And at the same time the sun was being formed by the same laws, at a point which was—and still is—the centre of the whole.

WHAT HAPPENS WHEN WE BREATHE?

The air is always pressing against everything and trying to get everywhere. When we breathe we expand the chest, and the pressure of the air forces some of it down into the lungs. Inside the lungs the air makes certain exchanges with the gases in the blood, so that when it is breathed out it is different in several ways from the air we breathe in. Breathed-out air contains much more carbon dioxide, much less oxygen, and much more water than breathed-in air. It contains various waste particles derived from the inside of the lungs; and it is hotter.

Until quite lately it was generally believed that the exchanges of gases between the air and the blood were just such as might happen from the two sides of, for instance, a thin piece of parchment or blotting-paper. But it has been proved that such an explanation is not enough. The changes that happen when we breathe could not be carried on without the help of the living cells that line the lungs. These cells are very flat and thin, and it used to be thought that they did nothing but allow the gases to pass through them; but now we know that they pick and choose what shall pass and what shall not. This is a very late discovery in the science of breathing.

WHAT MAKES COLORS IN THE FIRE?

Light is made of waves in the ether. Different waves make light of different colors. The waves are made by the movement of the parts of the atoms of the thing that sends forth light. Different atoms are made in a different way, and the "electrons" that make them move in different ways. Therefore, different atoms produce different kinds

of waves in the ether, which means that when they produce light at all, the light is of different colors. We know altogether about ninety different kinds of atoms, and each of them produces a different light. Also the same kinds of atoms may produce different kinds of light at different temperatures.

So now we see that the different colors produced in the fire are due to the various kinds of atoms that are present there at various temperatures hot enough to make them give forth light. Coal contains many elements, and thus a coal fire has many colors. Glowing carbon is red. The yellow flames are due to the atoms of the element sodium. If we see a violet flame it is due to the element potassium; and there is a blue flame produced by the atoms of a gas which is called carbon monoxide.

IF TREES GROW FROM SEEDS, HOW DID THE FIRST SEEDS GROW?

This is really another version of the old question: Which came first, the hen or the egg? The answer is that the egg came first, and the answer to our present question is that the first oak tree grew from an acorn, but the first acorn was a new thing in the world, not produced by an oak, though doubtless by something very like an oak.

There are constantly coming into the world of life new seeds from which grow kinds of living things which are more or less new. They vary from those which went before them, and so they are known as variations. The first egg that produced the first hen was a variation, and so was the first seed that produced the first tree. Of course, we do not expect such changes to be violent. We should not expect a fern to produce an acorn one day, or anything but a bird like a fowl to produce the egg from which a fowl grew. Still, these new things do keep on coming into the world, and in many cases the new kinds are superior to the old.

WHERE DOES ALL THE ENERGY GO AFTER A FOOTBALL MATCH?

This question has been wisely asked by someone who knows that all kinds of energy or power must always be accounted for, as they can never be lost. First, we must observe where the energy is after we have kicked the ball. It is in the motion of the ball, and, as it cannot be destroyed, we can readily under-

stand the first law of motion, which says that the ball will go on moving in the same straight line for ever at the same speed.

Therefore, we must find what stops the ball, and then we shall be able to trace the energy which the kick first put into it. The ball is stopped by the resistance of the air and by the friction as it rolls along the ground. This means that its energy is now to be traced in the movement and heating of the little particles of air which it disturbs, and in the movement and heating of the ground. Of course, the ground must be heated a little, just as our hand is when we rub it on our clothes. In this way the ball gradually spends its energy, and ceases to move. If we trace the energy in the other direction, we soon find that we are led back to the sun, which is the source of all energy.

CAN COAL-GAS ESCAPE FROM GRAVITY?

Nothing is more certain than that the law of gravity is always acting. It is never disobeyed or destroyed or suspended, because, though that may happen to the laws of men, it cannot happen to the laws of Nature. Therefore, if anything appears to be defying the law of gravity, we must be sure that really it is under the influence of some other force or forces, and that what happens is the result of those forces and the law of gravity as well.

This is the case with a floating balloon or a floating cork, with an airship or a sea-ship, with a mountain and the clouds round its summit. It applies to coal-gas also, and if coal-gas or any other gas rises, we must understand that gravity is acting on it all the time, and that without gravity it would behave very differently.

A most remarkable discovery has lately been made, that it is possible for the atoms of any gas to jostle each other, and that in this jostling process a certain number of them may move so fast that the gravity of the earth is not sufficient to hold them. When this happens these atoms fly away into space, though even as they do so, they are as much under the influence of gravity, and as much affected by it, as if they were falling back to earth. This especially applies to small globes, and explains why the moon has no atmosphere.

WHAT IS THE BLOOM ON A GRAPE?

The bloom on a grape is very beautiful and delicate, and we value it because it tells us that the grape has been cared for since it was plucked; or, if we see it on grapes that are growing, we value it there because we think of it as the right thing in the right place. Like the bloom on a cucumber, the bloom on the grape is really no part of the grape at all, nor can we even say that it is made by the grape. It is really a mass of microbes that have gathered upon the skin of the grape.

IS NIGHT AIR DANGEROUS?

Well, to begin with, all air at night is night air, so if it is dangerous we have to face it and breathe it through half our lives. But really this is a superstition, and quite untrue. The air at night is purer than by day, for it contains less dirt and dust and a smaller amount of the carbon dioxide which fires and furnaces contribute to the air so largely by day.

The fact is that, in many parts of the world, including those from which we get our civilisation and many of our superstitions, it is very dangerous indeed to go out in the night air. People who thus expose themselves are likely to suffer from a very serious illness called malaria—a word which really means bad air. And, naturally enough, it was thought that the night and the darkness changed the air in some way so as to make it poisonous.

But now we know that malaria is due to a germ which is pushed into our bodies by a certain kind of mosquito when it bites us. If the mosquito with this germ does not bite us, we do not get malaria. Now, the mosquito's rule is to feed—which means to bite—at night only, and so it is the malarial mosquito that is the danger of night air.

WHAT IS THE MOST VALUABLE THING IN THE WORLD?

The value of anything is the power that it has for the service and making of life. Thus, a thing may be very cheap and very valuable, such as air or light. It is not a question of cost price or expense at all. So, if we use the word valuable in the proper sense, we must answer that by far the most valuable thing in the world is love. Of

course, there could not be life at all without such things as water and air but, this being granted, the thing which makes for more life and higher life than anything else is love.

This is equally true whether we look at it from an outside point of view or from our point of view as human beings. Even from the outside point of view love is most valuable, because all the highest forms of life depend upon it, though lower forms of life, like vegetable life and that of the lowest animals, do not. But from our point of view as human beings there is nothing to approach love. Without the love of the mother for her child human beings could not exist at all, so that the highest kind of life that exists entirely depends upon love.

As for ourselves as individuals, we learn sooner or later that for each of us love is the most valuable thing in the world. It is the affection and friendship and companionship of those we love that give their value to life's other prizes, and that solace us in life's sorrows. And, unlike other things, the more we give the more we have, for it is quite true that the more we love the more we are able to love.

WHY DOES THE SAME FLOWER HAVE MANY DIFFERENT COLORS?

All the color materials of living things are definite chemical compounds, just like the colors in a box of paints. They are made where they are desired by the life of the corresponding cells of the plant or animal. Thus we must look upon the cells as tiny but wonderful chemists, able to make out of the plant-sap and the carbon dioxide of the air the various chemical compounds which causes them to reflect the different waves of light that give the leaves or the flowers their color.

That is all quite plain so far ; but when we come to ask how it is that the cells in the petals make one kind of color, and those in other parts of the flower entirely different colors, we can only say that these are the powers of life.

We are on the eve of going a little farther toward some dim understanding of the reason, for we are beginning to learn the details of the chemical processes that make the colors. It is also becoming possible to show how the colors of plants vary between parents and

offspring, and what are the causes in the seeds which decide what the colors of the plants that grow from them shall be. The foundations of our knowledge of this subject were laid nearly half a century ago by an Austrian monk named Mendel, who studied peas in his garden ; but his work remained unknown until a short time ago.

WHY DOES NOT THE BUNKER HILL MONUMENT FALL?

There is not a man of science in the world who can explain how it is that the towering column in Boston does not fall. No man, indeed, can explain why you can lift the whole length of a poker by merely grasping and raising the handle of it.

You are reading this, no doubt in a room somewhere, and nobody can tell you why that room stands. Men can measure the depth of the sea and the distance of the sun ; they can calculate the weight of the earth itself, and can tell what will happen in the sky in a hundred years ; but no man can explain why the roof of your house does not fall upon your head. It is not enough to say that the wood and iron are fastened together, that the bricks are held fast by mortar, and that great beams hold up the roof, for every tiny atom of matter that makes up bricks and mortar and wood and iron is flying about like snowflakes on a windy day. Nothing is what we call "solid." Every bit of matter flies about at a rate that we can hardly think of—specks so small that each single speck has as much space to move in—in proportion to its size—as the earth itself ; and they fly about, as we know, in a world that is itself for ever flying.

So that the very room we sit in is not still—every part of it is flying about ; and yet it keeps together and holds up. There are buildings that have stood for twenty and thirty centuries or more. Men do not know why a building stands—they do not know, that is to say, the extraordinary power which keeps these little flying specks of matter in their place. There is a name that stands for this mystery, but that is all we know. It is what we call the miracle of *cohesion*. If you were to examine the monument with X-rays, you would find that its stones are composed of tiny atoms separated from each other by certain distances. The X-rays would pour right

through the column, and illuminate objects on the other side.

How is it, then, that the column stands? Science can only answer that stone added to stone, and brick piled upon brick, will stand so long as the base is firmly founded in the ground, and so long as the weight at the top does not overbalance. All the vibration of traffic does not topple the Bunker Hill Monument over, and experience assures us that it will stand till the stone crumbles. But we cannot tell why.

Cohesion is one of Nature's secrets. How is it that the atoms which compose a walking-stick hold together? How is it that the atoms which compose a pin hold together? Much more may we ask: How is it that the atoms composing the Bunker Hill Monument hold together? They are little charges of electricity, tiny invisible atoms, and they stick together and build up by their millions what we call solids. Millions and millions of electrical charges from the fraction of a fragment of the monument at Bunker Hill. How do they hold together? When we have said Cohesion, do we understand the miracle any better?

ARE THE BEST SPEAKERS THE BEST THINKERS?

Certainly not, though we are too prone to suppose so. One man really thinks his best, whatever that is, when he is aroused by facing an audience; another can only think his best when he is absolutely alone with a pen in his hand. Good writers are often not good speakers. One of the greatest poets that England has produced since Wordsworth was the dullest and most uninteresting talker that could be imagined, and his friends say that they cannot remember a single noteworthy thing that he ever said. Yet, when he had a pen in his hand, he wrote some things which will never be forgotten. Oliver Goldsmith was another such case, for it was said of him that "he wrote like an angel and talked like poor Poll." On the other hand, many wonderful and effective speakers have been poor writers, and when their speeches are taken down and printed, we find, on reading them in cold blood, that there is nothing in them. Indeed, the power to speak well really argues nothing for or against a man's thinking power; and it is a good thing, on the whole, that

nowadays the written word is so much more important.

DO WE CHANGE OUR BODIES EVERY SEVEN YEARS?

There is no foundation at all for the notion that we change our bodies "every seven years." Almost every part of our bodies, except the outside of the teeth and part of the bones, is changing slowly all the time, for the material of it is being worn and burned away and replaced by new material. That is one of the reasons why we have to eat. In a very true sense, we "die daily," and build ourselves up again from our food. If it were possible to mark all the atoms in our food and all the atoms that make our bodies, we should certainly find that nearly all the material of the body changed completely in far less than seven years. But seven was an old magic number, and in most superstitions where numbers are concerned, seven comes in.

It is often asked why, if we change our bodies so often, marks in the skin remain. The reason is that the form of the body remains, though the material of it comes and goes. The stuff that makes our brain-cells flows into them and out of them, but we remember things that happened long ago.

On the other hand, there are certain parts of the body which are simply made somewhere else, and pushed out or pushed up to serve for a little and then disappear. Hairs are like this; people who dye the hair soon find that they must renew the dye every now and then, for, as the hair grows, the real color begins to show at the roots. The same is true of the outer skin, which is made and pushed up by the inner skin. Marks and stains on the outer skin do not stay, for the cells are soon washed away, and are replaced by new ones from beneath. But marks in the "true skin" remain, and never disappear.

WHY DOES A CANNON-BALL BOUNCE OUT OF THE SEA BEFORE IT SINKS?

What happens to the cannon-ball when it bounces is what happens when we make "ducks and drakes" with flat stones as we walk along the seashore. The key to it is the key to all cases where anything bounces. The moving object has force in it, for motion is a kind of force. When it strikes against anything, like a ball thrown against a

wall, part or all of its force is changed into something else.

What will now happen depends entirely on the nature of the moving object. If it is made of sand or snow, gathered into a loose ball by our hands, the force of its motion is changed into a force that scatters the parts of the ball asunder, as we notice when we throw a snowball at anything.

The reason is that a ball of snow or sand has no elasticity. But an india-rubber ball or a cannon-ball has elasticity, which means that when it is knocked out of shape it tends to return to that shape, unlike the snowball, and this return makes it rebound from the surface it has struck. The cannon-ball cannot rebound forever from the water, although it remains elastic, for neither the water nor the ball is perfectly elastic, and soon gravitation has its way.

WHAT IS MEANT BY GRAFTING?

Grafting is the process by which two or more varieties of fruit can be made to grow on one tree. The size of the stock usually determines the method to be followed. A common form is that of cleft grafting. For this a small branch—little more than a twig—about half the size of the little finger, is cut from the bush or tree which we desire to graft on another tree. This must be done in the early spring, and the grafts should be placed in a cellar or other cool place for a few days. The little branches are cut into lengths of about nine inches, and each graft should contain three buds of the last year's growth. The end to be inserted in the wood is cut in the shape of a wedge. When the time for grafting comes, the branch upon which the graft is to be made is cut back, a slit is made and held open by a small wedge. Then a graft is placed at each end of the slit, and pushed in tight. The wedge is removed; grafting wax is spread thickly over the wound, and for added protection during the time of healing a white cloth is wound over and around the branch. Two grafts are used because the wound in the branch heals more quickly if both ends are closed, and the chance of obtaining a successful growth is doubled. Luther Burbank makes his grafts on very small branches. In placing the grafts, care must be taken to see that the cambiums of both stock and grafts come

together, otherwise the graft will not grow. The graft is technically known as the "cion" or "scion." The cambium is the layer of growing tissue which lies within the bark, the "soft living part" spoken of on page 919.

By the use of grafting, much time is gained in fruit growing, and in the growing of ornamental and flowering shrubs and plants. Fine varieties of apples may be grafted on the wild crab apple, or fine varieties of roses may be grafted on wild rose stocks, and the time needed to grow strong roots for the young plant is saved.

WHAT IS THE MEANING OF ST. VALENTINE'S DAY?

The fourteenth of February is called St. Valentine's Day, as the name day or feast day of eight different Christian martyrs named Valentine; that is, in the medieval church, services were held on that day in memory of their martyrdom. The custom of sending valentines or gifts has nothing to do with the martyrs, however. It happened that a springtime festival which was kept by the Romans fell on the same day. The making of gifts on that day has come down from this old festival; but the origin of the custom was generally forgotten, and in time the gifts were called valentines from the name given to the day. This is a good example of the way customs survive, sometimes for centuries, among people who do not remember how they arose.

WHY DOES EASTER NOT ALWAYS FALL ON THE SAME DATE?

The feast of Easter is not always held on the same date because the date is reckoned by lunar months. The feast is kept by all the Christians of the Western world on the first Sunday after the full moon which follows the vernal equinox, that is to say, the twenty-first of March. As you know, the lunar months are shorter than the calendar months, as the months of the year are called. Therefore the full moon does not always fall at the same time in the calendar month. The moon may be full the day before the twenty-first of March, and as it will be twenty-seven days before another full moon comes round, Easter will be late that year. Again, a full moon may fall on the twenty-second of March, and as Easter must be held on the following Sunday, that year it will be early.

THE NEXT QUESTIONS ARE ON PAGE 5989.

THE BURIAL OF MOSES

"And he buried him in a valley in the land of Moab, over against Beth-Peor ; but no man knoweth of his sepulchre unto this day."—Deut. 34 : 6.

When Moses was leading the Israelites through the wilderness they demanded water : he struck the rock and produced water, but acted so proudly and failed so completely to glorify God that he was not allowed to enter the Promised Land, but on the borders of Canaan he climbed up Mount Nebo, which overlooked the fertile valleys and the rolling plains of the country his people were soon to enter. There God showed him all the wonders of the land and there, alone with God upon the mountain top, the great law-giver died. Israel mourned for him for thirty days.

BY Nebo's lonely moun-
tain,
On this side Jordan's
wave,
In a vale in the land of Moab,
There lies a lonely grave.
And no man knows that sepulchre,
And no man saw it e'er,
For the angels of God upturned the sod,
And laid the dead man there.

That was the grandest funeral
That ever passed on earth ;
But no man heard the trampling,
Or saw the train go forth :
Noiselessly as the daylight
Comes back when night is done,
And the crimson streak on ocean's cheek
Grows into the great sun,

Noiselessly as the spring-time
Her crown of verdure weaves,
And all the trees on all the hills,
Open their thousand leaves ;
So without sound of music,
Or voice of them that wept,
Silently down from the mountain's crown
The great procession swept.

Perchance the bald old eagle,
On gray Beth-Peor's height,
Out of his lonely eyrie,
Looked on the wondrous sight ;
Perchance the lion stalking,
Still shuns that hallowed spot,
For beast and bird have seen and heard,
That which man knoweth not.

But when the warrior dieth,
His comrades in the war,
With arms reversed and muffled drum,
Follow his funeral car ;
They show the banners taken,
They tell his battles won,
And after him lead his masterless steed,
While peals the minute-gun.

CONTINUED FROM 5823

Amid the noblest of the
land,
We lay the sage to
rest,

And give the bard an honored place
With costly marble drest,
In the great minster transept
Where lights like glories fall,
And the organ rings, and the sweet
choir sings,
Along the emblazoned wall.

This was the truest warrior
That ever buckled sword,
This, the most gifted poet
That ever breathed a word ;
And never earth's philosopher
Traced with his golden pen
On the deathless page, truths half so sage
As he wrote down for men.

And had he not high honor,—
The hillside for a pall,
To lie in state, while angels wait
With stars for tapers tall,
And the dark rock-pines like tossing
plumes—
Over his bier to wave,
And God's own hand, in that lonely land,
To lay him in the grave ?

In that strange grave without a name,
Whence his uncoffined clay
Shall break, again, O wondrous thought !
Before the judgment-day,
And stand with glory wrapt around
On hills he never trod,
And speak of the strife that won our life
With the Incarnate Son of God.

O lonely grave in Moab's land !
O dark Beth-Peor's hill !
Speak to these curious hearts of ours,
And teach them to be still.
God hath His mysteries of grace,
Ways that we cannot tell ;
'He hides them deep, like the sacred sleep
Of him He loved so well.

CECIL F. ALEXANDER.

THE HARP THAT ONCE THROUGH TARA'S HALLS

Tara was for many centuries a royal residence of the kings of Ireland and the scene of great meetings of the people. In the time of St. Patrick it was also the chief seat of the Druids. This well-known song was written by Thomas Moore.

THE harp that once through Tara's halls
The soul of music shed,
Now hangs on Tara's walls,
As if that soul were fled.
So sleeps the pride of former days,
So glory's thrill is o'er,
And hearts, that once beat high for praise,
Now feel that pulse no more.

No more to chiefs and ladies bright
The harp of Tara swells;
The chord alone, that breaks at night,
Its tale of ruin tells.
Thus Freedom now so seldom wakes,
The only throb she gives,
Is when some heart indignant breaks
To show that still she lives.

THE BELLS OF SHANDON

Francis Sylvester Mahony, the author of "The Bells of Shandon," was born in Cork, Ireland, in the year 1805. He became a priest, and afterwards gave up his calling to take his place on the staff of a magazine. He was a brilliant, witty and sarcastic writer, and his works are collected in a volume entitled "Reliques of Father Prout." When he became older he retired into a monastery.

WITH deep affection and recollection
I often think of those Shandon bells,
Whose songs so wild would, in the days of
childhood,
Fling round my cradle their magic spells.
On this I ponder where'er I wander,
And thus grow fonder, sweet Cork, of
thee;
With thy bells of Shandon,
That sound so grand on
The pleasant waters of the river Lee.

I've heard bells chiming full many a clime
in,
Tolling sublime in cathedral shrine,
While at a glib rate brass tongues would
vibrate—
But all their music spoke nought like
thine;
For memory dwelling on each proud swell-
ing
Of the belfry knelling its bold notes free
Made the bells of Shandon
Sound far more grand on
The pleasant waters of the river Lee.

I've heard bells tolling old "Adrian's Mole"
in,
Their thunder rolling from the Vatican,
And cymbals glorious swinging uproarious
In the gorgeous turrets of Notre Dame;
But thy sounds were sweeter than the dome
of Peter
Flings o'er the Tiber, pealing solemnly;—
Oh! the bells of Shandon
Sound far more grand on
The pleasant waters of the river Lee.

There's a bell in Moscow, while on tower and
kiosk O!

In Saint Sophia the Turkman gets,
And loud in air calls men to prayer
From the tapering summits of tall min-
arets.

Such empty phantom I freely grant them;
But there is an anthem more dear to
me,—

'Tis the bells of Shandon,
That sound so grand on
The pleasant waters of the river Lee.

SLEEP, BABY, SLEEP

This beautiful little poem, which is translated from the German, is a lullaby and has been set to very suitable music.

SLEEP, baby, sleep!
Thy father guards his sheep;
Thy mother shakes the dreamland tree,
Down comes a little dream on thee.
Sleep, baby, sleep!

Sleep, baby, sleep!
The large stars are the sheep;
The little stars are lambs, I guess;
The gentle moon the shepherdess.
Sleep, baby, sleep!

Sleep, baby, sleep!
Our Saviour loves His sheep;
He is the Lamb of God on high,
Who for our sakes came down to die.
Sleep, baby, sleep!

WHEN I AWAKE I AM STILL WITH THEE

Harriet Beecher Stowe, the author of this poem, is most widely known for her popular book "Uncle Tom's Cabin."

STILL, still with Thee, when purple morning
breaketh,
When the bird waketh and the shadows
flee;
Fairer than morning, lovelier than the day-
light,
Dawns the sweet consciousness,—I am
with Thee!

Alone with Thee, amid the mystic shadows,
The solemn hush of nature newly born;
Alone with Thee in breathless adoration,
In the calm dew and freshness of the
morn!

When sinks the soul, subdued by toil, to
slumber,
Its closing eye looks up to Thee in prayer;
Sweet the repose beneath Thy wings o'er-
shading,
But sweeter still, to wake and find Thee
there.

So shall it be at last, in that bright morn-
ing
When the soul waketh, and life's shadows
flee;
Oh, in that hour, fairer than daylight dawn-
ing,
Shall rise the glorious thought,—I am with
Thee!

MAIDENHOOD

In this poem by Henry Wadsworth Longfellow we have a charming picture of a young girl on the threshold of womanhood.

MAIDEN! with the meek, brown eyes,
In whose orbs a shadow lies
Like the dusk in evening skies!

Thou whose locks outshine the sun,
Golden tresses, wreathed in one,
As the braided streamlets run!

Standing, with reluctant feet,
Where the brook and river meet,
Womanhood and childhood fleet!

Gazing, with a timid glance,
On the brooklet's swift advance,
On the river's broad expanse!

Deep and still, that gliding stream
Beautiful to thee must seem,
As the river of a dream.

Then why pause with indecision,
When bright angels in thy vision
Beckon thee to fields Elysian?

Seest thou shadows sailing by,
As the dove, with startled eye,
Sees the falcon's shadow fly?

Hearest thou voices on the shore,
That our ears perceive no more,
Deafened by the cataract's roar?

O, thou child of many prayers!
Life hath quicksands,—Life hath snares
Care and age come unawares!

Like the swell of some sweet tune,
Morning rises into noon,
May glides onward into June.

Childhood is the bough where slumbered
Birds and blossoms many-numbered;—
Age, that bough with snows encumbered.

Gather, then, each flower that grows,
When the young heart overflows,
To embalm that tent of snows.

Bear a lily in thy hand;
Gates of brass cannot withstand
One touch of that magic wand.

Bear through sorrow, wrong, and ruth,
In thy heart the dew of youth,
On thy lips the smile of truth.

O, that dew, like balm, shall steal
Into wounds that cannot heal,
Even as sleep our eyes doth seal;

And that smile, like sunshine, dart
Into many a sunless heart,
For a smile of God thou art.

NIGHT

Many poets have made "Night" the theme of their verse. In this poem Percy Bysshe Shelley, the author, desires Night's powers of enchantment more than her attribute of rest.

SWIFTLY walk over the Western wave,
Spirit of Night!
Out of the misty Eastern cave,
Where, all the long and lone daylight,

Thou wovest dreams of joy and fear,
Which make thee terrible and dear;

Swift be thy flight!
Wrap thy form in a mantle gray,
Star inwrought!
Blind with thine hair the eyes of Day!
Kiss him until he be wearied out;
Then wander o'er city and sea and land,
Touching all with thine opiate wand!
Come, long sought!

When I arose and saw the dawn,
I sighed for thee;
When light rode high, and dew was gone,
And noon lay heavy on flower and tree;
And the weary Day turned to his rest,
Lingering like an unloved guest
I sighed for thee.

Thy brother Death came, and cried,
"Would'st thou me?"
Thy sweet child, Sleep, the filmy-eyed,
Murmur'd like a noon-tide bee—
"Shall I nestle by thy side?
Wouldst thou me?" And I replied—
No! not thee.

Death will come when thou art dead,
Soon, too soon!
Sleep will come when thou art fled;
Of neither would I ask the boon
I ask of thee, beloved Night!
Swift be thine approaching flight!
Come soon, soon!

THE autumn is a gipsy, when the frost is
in the air;
A joyous, tattered wanderer, with sumac in
her hair.
H. ANUNDSEN.

THE ROSE

This pretty little poem was written by Edmund Waller, a poet and genial courtier of the seventeenth century and a great favorite in the Court of King Charles the Second.

GO, lovely rose!
Tell her that wastes her time and me,
That now she knows,
When I resemble her to thee,
How sweet and fair she seems to be.

Tell her that's young
And shuns to have her graces spied,
That hadst thou sprung
In deserts, where no men abide,
Thou must have uncommended died.

Small is the worth
Of beauty from the light retired;
Bid her come forth,
Suffer herself to be desired,
And not blush so to be admired.

Then die! that she
The common fate of all things rare
May read in thee:
How small a part of time they share
That are so wondrous sweet and fair!

A CRADLE SONG

Isaac Watts, the author of this cradle song, was a famous hymn-writer and theologian who lived from 1674 to 1748.

HUSH! my dear, lie still and slumber;
Holy angels guard thy bed!
Heavenly blessings without number
Gently falling on thy head.

Sleep, my babe; thy food and raiment,
House and home, thy friends provide,
All without thy care or payment,
All thy wants are well supplied.

How much better thou art attended
Than the Son of God could be,
When from Heaven he descended,
And became a child like thee!

Soft and easy is thy cradle:
Coarse and hard thy Saviour lay,
When his birthplace was a stable,
And his softest bed was hay.

See the kindly shepherds round him,
Telling wonders from the sky!
Where they sought him, there they found
him,
With his Virgin-mother by.

See the lovely babe a-dressing!
Lovely infant, how he smiled!
When he wept, the mother's blessing
Soothed and hushed the holy child.

Lo, he slumbers in his manger,
Where the horned oxen fed;
Peace, my darling! here's no danger,
Here's no ox a-near thy bed!

May'st thou live to know and fear him,
Trust and love him all thy days:
Then go dwell for ever near him;
See his face, and sing his praise.

I could give thee thousand kisses,
Hoping what I most desire:
Not a mother's fondest wishes
Can to greater joys aspire.

MY KATE

Elizabeth Barrett Browning, the author, had original genius, a fervent heart, and great power of musical expression.

SHE was not as pretty as women I know;
And yet all your best, made of sun-
shine and snow,
Drop to shade, melt to nought, in the long
trodden ways,
While she's still remembered on warm and
cold days—

My Kate.

Her air had a meaning, her movements a
grace;
You turned from the fairest to gaze on her
face:
And, when you had once seen her forehead
and mouth,
You saw as distinctly her soul and her truth—
My Kate.

Such a blue inner light from her eyelids out-
broke,
You looked at her silence, and fancied she
spoke:
When she did, so peculiar yet soft was the
tone,
Though the loudest spoke also you heard
her alone—

My Kate.

I doubt if she said to you much that could
act
As a thought or suggestion: she did not
attract
In the sense of the brilliant or wise; I
infer
'Twas her thinking of others made you think
of her—

My Kate.

She never found fault with you, never im-
plied
Your wrong by her right; and yet men at
her side
Grew nobler, girls purer, as through the whole
town
The children were gladder that pulled at her
gown—

My Kate.

None knelt at her feet confessed lovers in
thrall:
They knelt more to God than they used—
that was all.
If you praised her as charming, some asked
what you meant;
But the charm of her presence was felt when
she went—

My Kate.

The weak and the gentle, the ribald and
rude,
She took as she found them, and did them
all good;
It always was so with her—see what you
have!
She has made the grass greener over her with
her grave—

My Kate.

My dear one! when thou wast alive with
the rest,
I held thee the sweetest, and loved thee the
best;
And now thou art dead, shall I not take thy
part,
As thy smiles used to do for thyself, my
sweet heart—

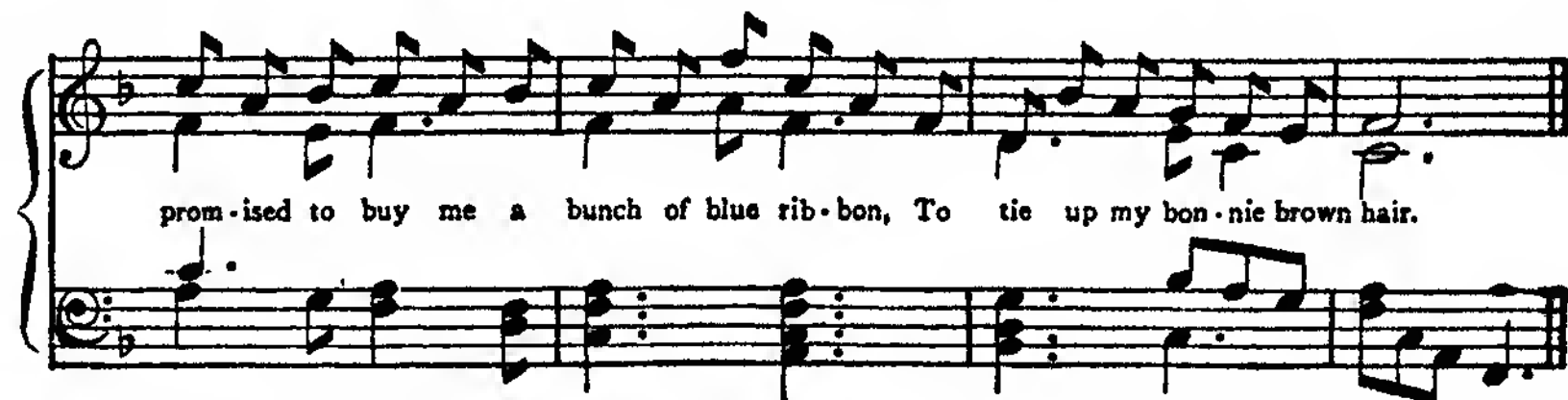
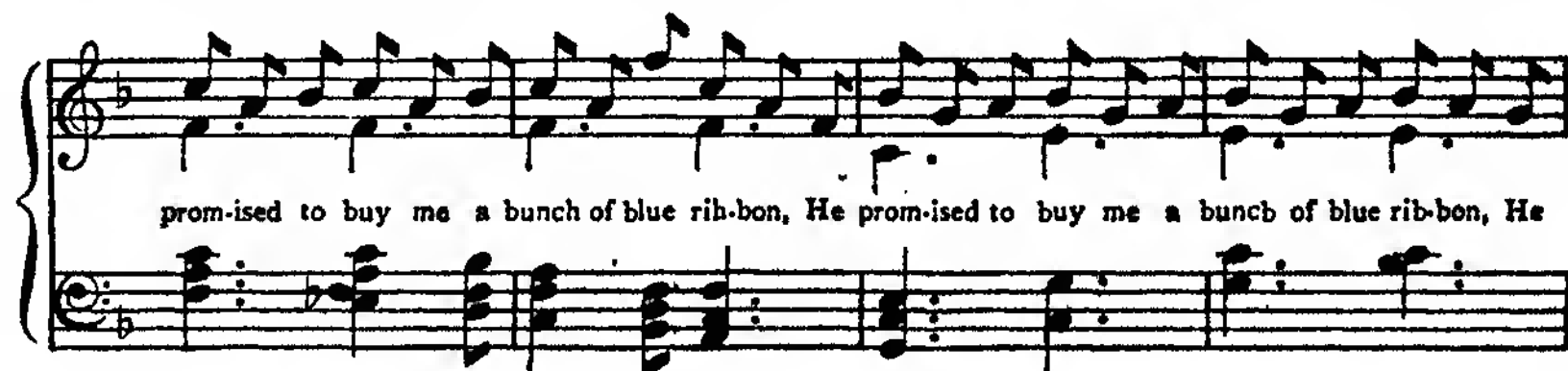
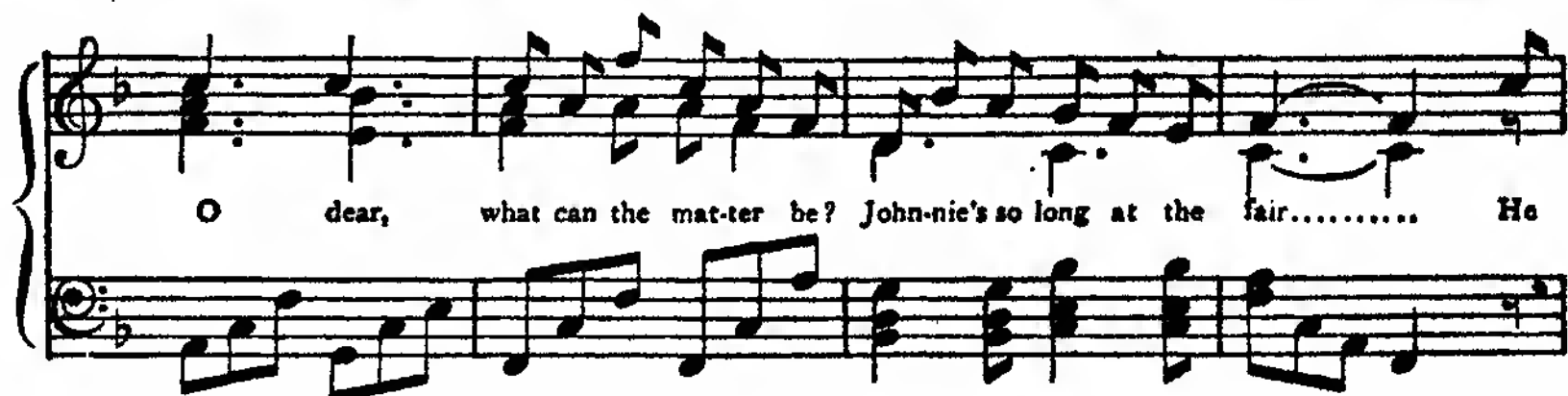
My Kate.

LOVE IN TEARS

Coventry Patmore, an English poet of the Victorian age, dwells much in his poems on the power of the spirit of love.

LOVE, won or lost, is countless gain;
And let us own, the sharpest smart
Which human patience may endure
Pays light for that which leaves the heart
More generous, dignified, and pure.

O DEAR, WHAT CAN THE MATTER BE?



O DEAR, what can the matter be?
O dear, what can the matter be?
O dear, what can the matter be?
Johnnie's so long at the fair.

O dear, what can the matter be?
O dear, what can the matter be?
O dear, what can the matter be?
Johnnie's so long at the fair.

He promised to buy me a bunch of blue ribbon,
He promised to buy me a bunch of blue ribbon,
He promised to buy me bunch of blue ribbon,
To tie up my bonnie brown hair.

He promised to bring me a basket of posies,
A garland of lilies, a garland of roses,
A little straw hat, to set off the blue ribbons
That tie up my bonnie brown hair.

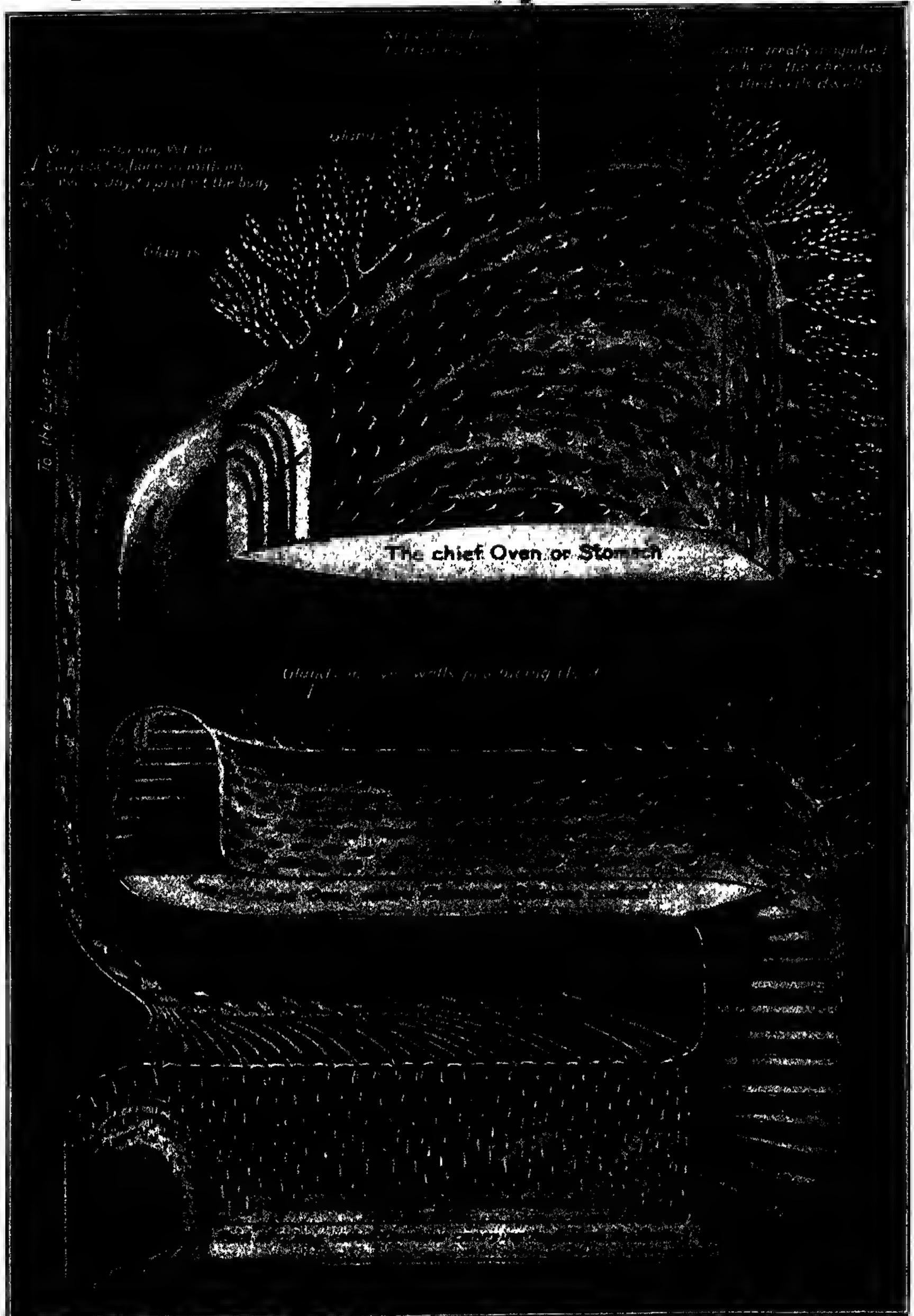


If bees stay at home,
Rain will soon come.

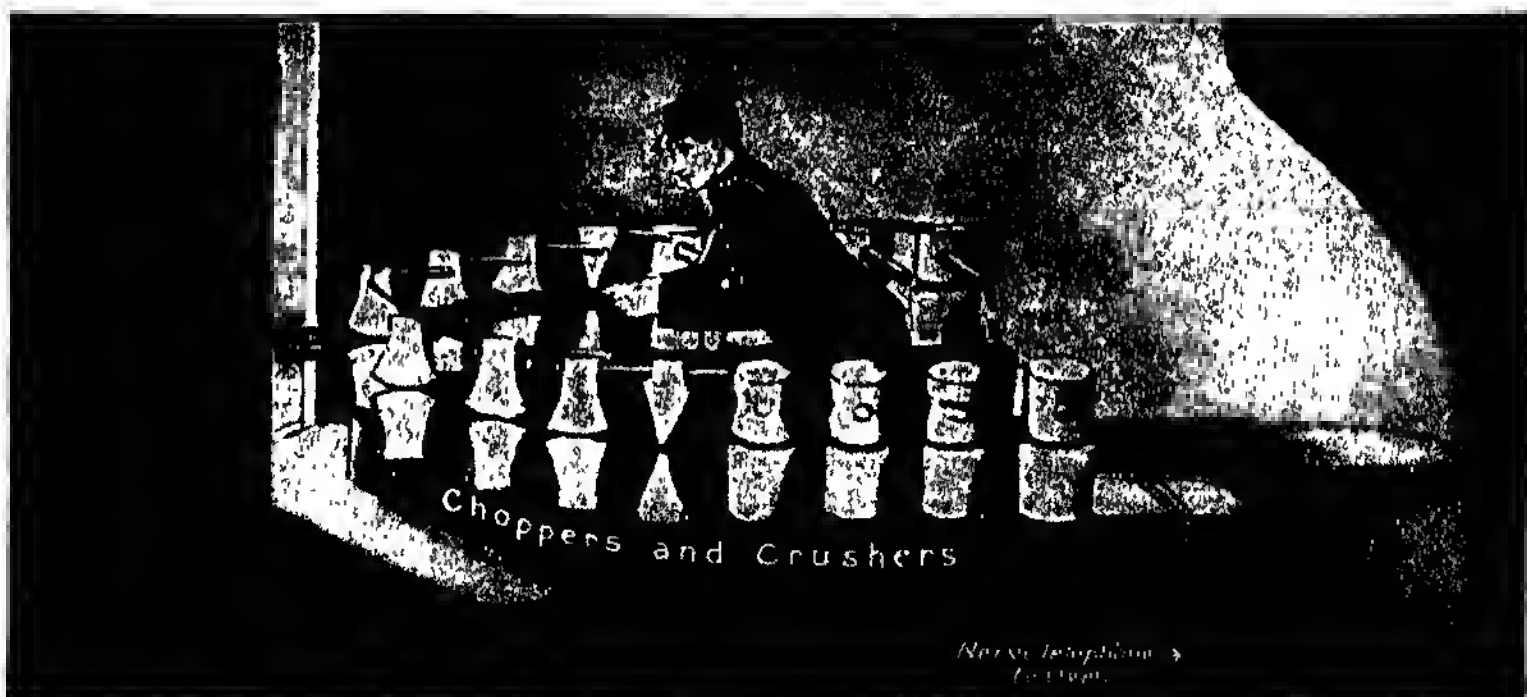
If they fly away,
Fine will be the day.

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THE GREAT OVENS OF JACK'S KITCHEN



When the porter has prepared the food, it is passed down the red lane to the ovens. The first, the stomach, is lined with glands, in which dwell millions of chemists, or cells, who help to cook and digest the food before it is passed on to the long-coiled oven known as the upper part of the bowels. Here cooking of the oils and fats prepares the food for the long, coiled corridors of the bowels where millions of tiny "fingers" reach out, each containing a loop of a blood-vessel, and covered with cells, in which live chemists who pass the useful part of the food into the blood. Some of this is changed into white corpuscles, which protect the body.



Jack's hall porter, who examines the fuel after it is admitted, and prepares it, with the aid of the choppers and crushers, for the ovens at the end of the red lane, in which the food is cooked.

THE GREAT CORRIDOR DOWN THE RED LANE TO THE KITCHEN

WE know that as Jack's house is always burning and has several large furnaces always going day and night, he requires a large supply of fuel to make good the loss. We know also that every inch of room in his house is precious, and he can store up only very little fuel, as a rule, so that a fresh supply is wanted very often—three or four times a day, indeed, and when he is very young he needs it more often than that. We know also that Jack's house is raised on stilts, or legs, and provided with arms, so that it can walk about and help itself.

Though Jack's house is so magnificent, it has only a front door for the admission of everything it needs, except air. There is, of course, the great ventilating shaft, but that does not count for the use of fuel. It is true that, in desperate circumstances, such fuel as oil can be rubbed through the outer wall into Jack's house, but the rule is that all Jack's fuel is received by the front door, and examined by the hall porter.

The responsibility of deciding

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what shall be admitted to Jack's house is, of course, enormous. There

are hosts of things in the world of which one drop or one grain would be quite sufficient to destroy Jack's house beyond

repair. As a rule, the hall porter, and the front doors themselves, which are covered with tiny sentinels called nerve ends, are very clever in recognizing such dangerous things, not to mention pieces of stone, or splinters, and so on, which would be likely to jam in Jack's great central corridor; and they have a short and effective way with anything they don't like, for the walls of Jack's hall come together, a sharp blast of air rushes through it, the hall porter lends a hand, the doors open smoothly outwards—and Jack spits out the nasty stuff.

There is no doubt that Jack throws a great deal of work upon his hall porter, and that occasionally that invaluable servant shows signs of overwork by looking pale, but, as a rule, he is spruce and ruddy, and the better he does his master's work the more he himself thrives. For,

of course, he has his temptations, and too often he yields to them, and admits into Jack's house what has no business to enter there.

His rule is to test each piece of proposed fuel by means of what we call taste, and if he likes the taste of anything after he has it, he gives it a coating of smooth material which helps it onwards. Generally speaking, the rule is that the things the hall porter likes to taste are good for Jack, and the things he dislikes to taste, and will not admit, are bad for Jack, but there are exceptions to this rule.

THE HALL PORTER'S ASSISTANTS

The fuel the hall porter admits is seldom quite ready for use, and so the hall is really a department of Jack's kitchen. The ordinary name for the fuel is food, and all food requires to be cooked. Some people will think that a mistake, for we eat uncooked food. But all food, whether we eat it cooked or whether we eat it raw, requires to be cooked in Jack's kitchen; and this business of cooking is, in some ways, the great concern of Jack's house, just as it is in most houses.

In the hall, for instance, there stand no fewer than twenty assistant cooks when Jack is very young, and as many as thirty-two when he is grown up, who devote themselves entirely to chopping up Jack's vegetables, and so on, cutting, crushing, and mixing, before the food is sent along the celebrated "red lane" to Jack's kitchen, which is really the huge living oven where it is cooked. These assistants in the hall are very valuable, and if they fall ill and have to go, Jack cannot get any others that can do his work nearly so well.

THE CARE OF THE HALL

The best way to take care of these precious helpers is to give them enough work of the right kind to do; if that is done from the first they will very seldom go wrong in any way. That is also the best way to take care of all servants and masters.

And here it may be freely admitted, in the friendliest way, that if Jack has a fault, it is that he is a trifle careless about his hall. The hall porter does his best, and is quite fussy about litter of any kind, about the smallest trifle of fuel or rubbish that may have got stuck among the

choppers; but since Jack changed his habits and began to use prepared and partly cooked fuel, instead of the raw stuff of long ago, it cannot be denied that his hall is seldom as clean as the hall of such a mansion should be. We must remember that this hall is an oven, too, and that the food is partly cooked inside it by the saliva produced in laboratories called the salivary glands.

Now, we cannot have chopping and cooking done in a place without mess and litter and a certain amount of soiling; and the hall porter is not equal to doing any very hard scrubbing. Nowadays that must be done for him, if the hall is to be kept nice, and if the litter and mess in it are not to get further into Jack's house and clog the wheels generally. Jack must brush his teeth, in a word; and, above all, he must do so, and have his hall in perfect sweetness and tidiness, before he locks up for the night and goes to rest.

THE ROOM WITH THE RED WALLS

Let us make ourselves very small and follow the prepared fuel down Jack's "red lane"—with Jack's first floor all round us, if we could see it—and down into his stomach, on the kitchen-floor, where most of the work of preparing the fuel is done. This is a most extraordinary room, with light red walls, and no breathing space at all. It is practically a living oven, which grows large or small according to its contents, but always so as to bring the walls close together, an oven lined with chemists, who pour from its walls a variety of wonderful liquids which cook the contents; and as they do so the walls of the oven are continually moving backwards and forwards, turning everything over and over, letting nothing get burned or too brown.

But there are three things clearly to be remembered. If the chopping, and the moistening, and the preliminary cooking have not been properly attended to in the hall, and if, on the contrary, Jack has simply "bolted his food," he would have done much better if he had bolted his door. Sometimes the oven will simply send everything back, and, as a general rule, this, unpleasant though it be, is much the best thing it can do in the circumstances. Short of that, the oven will get out of order, and look, if

we could see inside it, rather like the hall porter when he has been enjoying himself instead of attending strictly to his master's business and keeping his premises clean.

The second point is that this oven is not made for cooking any kind of fat or oil, though it will always try. It will mix the oil—all fats melt and become oils in Jack's house, owing to the cosy warmth he keeps it at—and roll it backwards and forwards, and the chemists in the walls will pour all sorts of things upon it, but no oil is cooked in Jack's chief oven.

THE WONDERFUL OVEN THAT PREPARES JACK'S FUEL

The third point is that, just as this oven is not a mill, and cannot do the work of the mill in Jack's hall, so also it is not a sieve or a filter. Its business is cooking, and nothing else. The things put into it may be sent back, if they are highly unsuitable, or sent forward when they are ready; but we are wrong to suppose that they soak through the walls of the oven. Practically no food ever enters the blood in this fashion. For this wonderful oven is not capable of cooking the food to such an extent that it is fit to enter the blood.

Many other things have to be done to it before it is ready for that. The stomach carries out the second stage in the cooking process, the first having been begun in the mouth while the crushers of the mill were doing their work. The third and later stages are carried out in the bowel, the long, coiled corridor which leads onward from the chief oven, or stomach.

If the stomach becomes quite worn out, or ill or injured so that it cannot do its work it can be dispensed with, but it has very great uses. It is the largest of Jack's ovens, and is very convenient by reason of its great size, for it enables him to take in fairly large supplies of fuel at a time, and then to do something else between whiles. It provides a convenient oven in which the starches in the food are partly cooked, or fermented, by the saliva with which the food was mixed in the mouth. After the food has been in the stomach from about twenty minutes to half an hour, this process stops, and the wonderful walls of this most wonderful oven, which have all the time been stirring the food,

pour forth a fluid, usually called the "gastric juice," which sets to work to cook, or ferment, the most important foods of all, which are called the proteins.

THE CHEMISTS IN THE WALLS

Different portions of the gastric juice come from different parts of the stomach. This oven is wonderfully lined, from end to end, with tiny glands, or laboratories, where the chemists, called cells, manufacture what is required to cook the food. A certain set of these laboratories are notable because they produce an acid, called hydrochloric acid, which is very well known.

This acid is produced from the common salt which is always found in the blood, because it is a necessity for Jack's life. The remarkable thing is that if a chemist, no matter how clever he is, other than one of the living cells in Jack's stomach, desires to get hydrochloric acid from common salt, he has to split up this very firm compound by powerful means; but the tiny chemists that live in Jack's oven can do it without any effort at all; and no living man can tell us how.

THE ENEMIES WHO TRY TO GET IN

The other interesting fact about this acid is that, quite apart from its use in cooking, or digesting, Jack's food, it is a great enemy of housebreakers and thieves, for it is what is called an anti-septic, which kills microbes, or germs. These tiny living things are Jack's chief enemies, which are constantly trying to enter his house, stealing from it and often poisoning it, or breaking down the partitions between one room and another, and causing destruction and ruin. One of their easiest and commonest ways of entry is in the food; they are far too small for the hall porter to notice, and they soon reach the oven. There they thrive until the chemists in the laboratories pour forth hydrochloric acid, and then they are overpowered by millions, and their dead bodies are digested and burned up, and so made useful. It is probable that Jack's house could hardly protect itself at all from the constant attacks of these housebreakers were it not for the hydrochloric acid which they meet so soon, and which can usually be trusted to kill nearly all of them, except when the oven is out of order, and the

chemists in its walls are not working properly. Unfortunately, however, certain microbes have learned how to coat themselves with a very dense and firm layer of something which the hydrochloric acid of the stomach cannot manage to get through, and they are consequently carried onward to find their way into the blood and they continue to work mischief there.

TELEPHONING ANYWHERE AT ANY TIME

If this oven is to work well, to move its walls strongly and firmly, and produce suitable fluid for protective and cooking purposes, and not pass its contents on until it has done all it should to them, it must be perfectly emptied at regular intervals. In no other way can it have its walls thoroughly cleansed and kept in good working order; and surely nothing more reasonable could be expected. Thus, if Jack overloads it, and takes in a fresh supply of food before the last is sufficiently cooked and passed on, or if he is always putting candy or apples into it between meals, his oven will never get a chance to have its walls thoroughly scraped down, and the chemists who live in them will grow weary, and will not be able to do their work properly, and everything will go wrong.

The oven and the chemists are all on the telephone, so to speak, from the hall porter; and no sooner does he admit anything he approves of than he sends a message to the stomach, which at once begins to prepare a fresh supply of gastric juice. The stomach "waters" by telephonic order, so to say, just as the mouth waters by telephonic orders from the eyes or the nose when we see or smell something delicious. But indeed there is *no part* of Jack's house which cannot telephone to *any other part* of it at any time.

THE LIVING WALLS OF THE OVEN

The oven into which the food passes next is a longer, narrower oven, and is known as the upper part of the bowel. Its walls, also, are lined with glands which produce a cooking-juice of their own; much more powerful is the special mixture of juices sent here from another great laboratory called the pancreas, and also from the liver.

If we study the inside of this oven, the

bowel, as we pass along it, we find that it gradually ceases to be an oven, and becomes more like a filter. Tiny little projections, like the fingers of a glove, line its walls in millions; and each of these projections contains a loop of a blood-vessel.

Each projection is covered with living cells, which are chemists of a very different kind from those we have hitherto noticed in Jack's house. They make nothing; their business is to choose. As the contents of this oven, now at last fully cooked, flow past them, they pick out all the various substances which are good, and, as far as possible, reject the rest. And then they pass them into the little loop of blood-vessel in the finger-like projection, and in this way they pass off to the liver for further treatment.

All this time we have really been traveling along a central tube, or corridor, which commenced at Jack's front door and hall, and continued with his red lane and gullet—a very narrow stretch this—then expanded into its widest place, the stomach, and then narrowed again into the part which we have just been describing. If we continue our journey many feet further along we come to some new features.

JACK'S PROTECTORS

If Jack's house were a city, we should have to call these the barracks and military schools and police-stations. We find them in the wall of the bowel, and they are crowded with young and growing-up cells, which are soon going to be passed into the blood, where they will be the white blood-cells, Jack's protectors, ever ready to kill any microbes that have escaped the hydrochloric acid in the stomach or have entered by the ventilating shaft. Millions of these wonderful little protectors are poured afresh into the blood after every meal.

Such are some of the wonders of what is perhaps the humblest and the least beautiful part of Jack's house. It is manned by countless millions of living cells, living and dying, who never see the daylight nor have a moment for their own pleasure or recreation, but are constantly at their work in order to keep his body quite strong and healthy.

CONTINUE ON PAGE 6019.

The Book of STORIES



OLAF OF ORCHARD FARM

OLAF was a little boy who lived on a farm in the North Country, where the grey rocks show through the green grass. He lived in Orchard Farm, set snug in a nook between two hills, so that the west wind with the rain, and the east wind with the cold, could never have their way with it. But the kindly sun mellowed its roof, and shone on the lattice-panes in the window till they glittered like diamonds.

The farm took its name from the orchard behind the house, where apples and damsons ripened red and green and purple, among the bracken and the heather. Olaf used to play in the orchard when he was a very little boy, and later, when he was a big boy.

He used to play under the apple-trees, thinking of the tales his father told him, and particularly of the brownie that had once lived at Orchard Farm, and had gone away because his father had given it a little pair of green breeches and a brown coat for saving his wife so much of the housework.

For the farmer and his wife had been on the farm for fifteen years and more, and often, as they looked round their farm kitchen and saw the brass kettle, shining so brightly over the mantelpiece, and the warming-pans glittering

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on the walls, and the hams hanging up among the beams, and the black kettle that

was used every day singing on the hearth, and the floor that was scrubbed I don't know how many

times a week, and the wooden table that was scrubbed even cleaner, they would remember ever so long before—before Olaf was born—how there had been little need to work on these things, because while the farmer's wife was sleeping in bed, a little live thing would come night after night, and clean the floor and scrub the table, and put a shine on the kettle, and make the warming-pans so bright.

They remembered those times, and they sighed to think that the little live thing had left them. They had learned to love the little thing, though they had never seen its tiny form, and even now they missed it, and were sad that it had gone away.

Olaf used to spend his days picking up the windfall apples in the orchard, or watching the sheep grazing on the short grass. Sometimes he would help his mother with the churning, or watch the saucepan to see that the porridge did not boil over. But whatever he did during the day he was always ready to meet his father, and the big farmer used to come into the kitchen carrying Olaf on his shoulder,



and saying, "A story, my son—a story? Shall I tell you about our own brownie?"

And Olaf would climb down and run and fetch his father's slippers. And his father would sit down heavily in the big chair, and take Olaf up, and talk of the little live thing that used to wash the dishes and keep the whole farm as clean as a new pin.

"And tell me why he went away," Olaf said one evening.

"Well, my son," the farmer said, "there's great pride in brownies. They'll work their fingers off for love, as you may say, but you mustn't thank them. Not that you mayn't put them a saucer of good milk, with the cream in, outside the door of a night. Many's the night I've seen your mother take the saucer, and lift the latch and slip out to leave it for our brownie. But that's all gone now. You may give them milk, and they'll take it friendly as it's meant. But if you pay them, they'll take what you give them, and never come again, unless——"

The farmer's wife interrupted.

"Don't tell the child the way to get the brownie back, or he'll think of nothing else, and go traveling over the wide world by night, and maybe never find his way back to us."

"No, lass, I won't tell him. Well, my son, you must give him nothing, or you will lose him. And I, fool that I was, I was so grateful to the little thing for all he had done for us that I thought to

myself, 'I'll not let him work for nothing. That little one must have fairly worn his coat out slaving for us, and as for his trousers, who knows what a state they're in with him running to and fro?' So I brought back a piece of fine green cloth, and a piece of brown, and your mother there sat up all night a-cutting and a-stitching, and in the morning the things were done, as neat a little pair of breeches and as handsome a coat as ever she made for you."

"It's all true, dearie," said the farmer's wife.

"That night, when your mother put the milk out, she laid the clothes beside it in a little parcel, and in the middle of the night we heard the little thing talking to itself. 'A nice pair of breeches,' it says, 'and a coat to my back! I can come here no more, no more, till a son of the house travels the world with me and finds me first.'"

"There, now you've told him," said the farmer's wife.

"He'll learn some day, whether I've told him or no," said the farmer.

When he had once heard about the brownie who had lived on the very farm where he was born, Olaf wanted to hear of him again and again, so that in the end the farmer and his wife used to end all their tales with a little bit about the brownie of Orchard Farm. Olaf felt it such a pity that the brownie should have left his home before he, himself, came to





live there. Some night, perhaps, he might have listened to its pattering feet.

He thought of the brownie all day, and felt that, although the world away from the moorland might be very terrible, he was quite willing to travel in it, if only by doing so he could bring the brownie to the house again.

Olaf asked everyone he knew if they could tell him where to find the brownie. He asked the oldest apple-tree in the orchard—the one with the twisted trunk ; but the tree said nothing. He asked the cows ; but they said nothing. He asked the dog, and it barked about other things. Only the sheep helped him. When they had been cropping near low bushes and their wool was full of little rough brambles Olaf thought they seemed to *want* to tell him something. They said nothing, but they looked as if they knew. He tended the sheep throughout the year, and watched the young lambs grow into big sheep, and watched the old sheep lying in warm places in the spring sunshine while the new lambs played about them. He wondered if the lambs had been told where the brownie was hidden, and he half thought he might be lucky enough to overhear the old sheep telling them.

The farmer and his wife saw that Olaf was happy to be with the sheep, so they sent him every day to see that they did not stray too far away over the moorland.

All through the summer days Olaf used to lie among the heather, saying to himself, " Travels the world, and finds me first—travels the world, and finds me first."

At last, one June evening, as he was coming home from the sheepfolds, he heard the music of bagpipes, small and very faint, near him on the moorland.

He heard it again the next night, and the night after that, and every night, until at last, on midsummer evening, he made up his mind to follow it and find out who it was that played the pipes so sweetly.

He left the path, and followed the music, walking warily lest he should lose it. It sounded softly, and always before him, as if it came from the pile of rocks on the moor where there is a cairn, and where a little mountain ash waves in the breezes.

" Maybe it is the old people who live under the cairn," thought Olaf, for there is a tale in the countryside that a race of little people were buried beneath the pile of stones, and that they come out to dance on summer nights, in the moonlight, though no one has ever seen them.

As he came near the little precipice he knew that the music was directly above it. So he started to climb up. Half-way was easy enough, and he won his way up to the mountain ash. He twisted





himself over it, and rested there, wondering how to get higher, for he saw six feet of smooth rock up to the top, where there was a thick mass of heather.

There was a crack in the rock about half-way between the ash and the heather, and Olaf clung there, unable to climb farther, and knowing that if he slipped he would fall toppling to the bottom. And all the time the music of the bagpipes, scarcely louder than a concert of bees and crickets, sang close above his head.

"Oho, there—you with the music!" Olaf shouted at last.

The music stopped suddenly. A little brown face with a small white beard looked eagerly through.

"So it's Olaf at last!" it said.

A thin, brown, hairy little arm stretched down through the heather and caught Olaf by the wrist.

"Pull now," said the little thing.

And Olaf pulled, and the muscles jumped out on the hairy little arm, and Olaf found himself scrambling over the heather at the top.

He lay sprawling on the edge of a little cleft in the rock, with high walls on the sides and far away in the midsummer night the shapes of the hills covered with pine-woods that slope to the edge of the sea. In one of the walls of rock there was a little cave, and just in front of it was a wee three-legged stool that had been upset, and a little set of bagpipes on the ground beside it. "I've been waiting for you a long time," said the little brown thing, as he helped Olaf to his feet. "Look!" And he ran into the cave, and came out dragging a broom behind him, and holding a stone so polished that even in the dim light Olaf could see his face in it. "I've worn out two hundred and thirty of these brooms," he said; "and polished that rough stone smooth—all for want of proper work since I had to leave the farm."

"Are you the brownie?" asked Olaf joyfully. "Why, I've been looking for you ever since I can remember! I should never have found you but for the sheep. I stayed with them and learned the moor music, the hum of the bees and the chirping of the crickets. When you played your pipes I knew it was different, and so I followed. That was why the sheep knew, I suppose—because you live on the moor?"

"Yes," said the brownie, "I've very often taken the heather from their wool for them, when it was all matted and so uncomfortable. They know me quite well."

THE CHILD WHO CAME BY NIGHT

A TALE OF VERULAM IN THE DAYS OF ROMAN RULE

TWILIGHT was falling on the dense, swampy forest around Verulam, and, seeing this, the tired Roman legionaries formed a camp for the night in a deserted British hill-fort. As they were busy roasting some of the cattle captured after the great battle at Walton-on-the

"He will escape me! He will escape me!" he exclaimed. "What slow, sleepy gluttons all these Romans are!"

He spoke wildly in his native language. The soldiers of Rome looked at the handsome young barbarian with amused eyes. Had they known that he was

calling them names, they might have ill-treated him; for they were proud, fierce men, these warlike Roman farmers who had conquered Gaul, and were now driving the tribes of Britain before them.

"What a triumph we shall be able to give Caius Julius Cæsar on returning with him to Rome!" said one of them as he gazed at Conan. "When we capture Caswallon, we'll have a procession of a hundred of these British chiefs, and won't slaves be cheap!"

"No more wars for me then," said another legionary. "I shall buy a British girl to wait on my wife, and about ten sturdy Britons to work my farm. I'll soon whip them into shape, and then I shall live like a patrician."

Conan understood Latin, and he stared at the speakers in silent bitterness. Then, turning on his heel, he strode towards a small, slight man in bright armor who was pacing round the camp and carefully studying the position of the earthworks.

"Cæsar," said the young chief, "why let your men stand idling here! If you do not push on and attack Caswallon at once, he will take to the woods, and you will never get him. It is only an hour's march now to his

village." We could take him by surprise under cover of night, for I know where his watch is stationed and can silence that.

"How you Britons love each other!" said the great Roman captain. And his cold, thoughtful eyes lighted up with a strange, ironic smile. Then, changing his tone, he caught the young British



"Cæsar," said the chief, "let your men push on."

Thames, the scouting party returned, headed by Conan, the young British chief from Colchester, who had thrown in his lot with the invaders. Conan's eyes flashed with anger and disappointment when he saw that the Romans were not only feeding in the fort, but were also preparing to remain there for the night.

chief by the shoulder, and said in a stern voice, "You mad, foolish young savage! What would happen to my army if Caswallon, your father-in-law, caught us marching in single file in these woods at night? By Jupiter, if I thought you meant to betray me as you betrayed him at Walton, I would——" He stopped, for there came a look on Conan's face that made even the conqueror of the world pause. It was not often that Julius Cæsar was fretful and ill-tempered, but a ten hours' march ever on the alert through steaming swamp and brainbly forest had wearied him, and he was beginning to see clearly that he could not conquer Britain as easily as he had conquered Gaul.

Conan strode moodily down the hill and entered the wood stretching away in the darkness to Verulam, as the fortified town of St. Albans was then called. He hated the Romans, for he knew that they were his real enemies; he hated himself, for he knew that he was a traitor to his country; but still, above everything else, he hated Caswallon, the chief of Verulam and the brave leader of the united tribes of Britain.

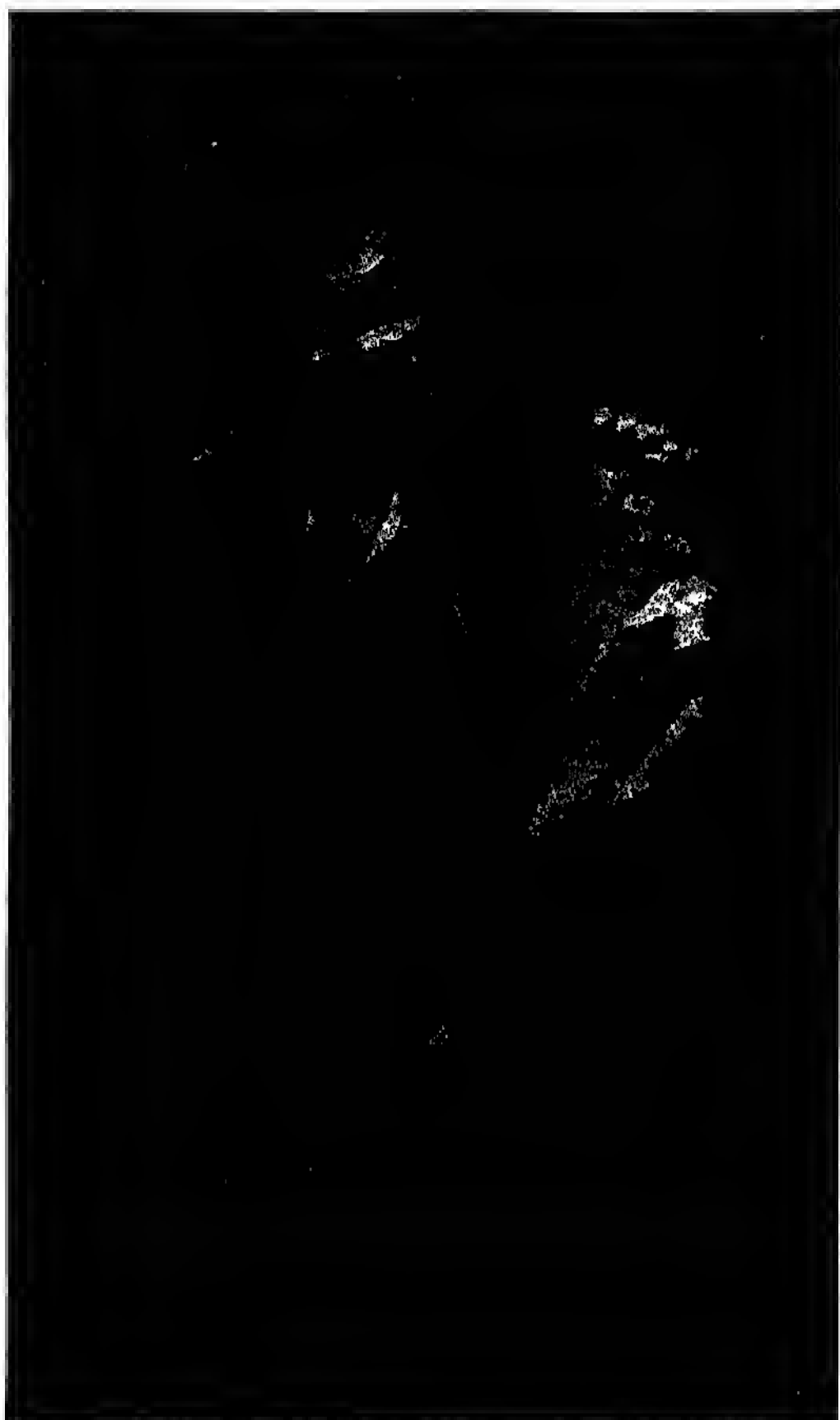
Seven years before Caswallon had given his daughter in marriage to Conan. Four years after that, Conan's father, the King of Colchester, had made war on Caswallon. But Caswallon was a mighty chief, and he drove back Conan's father and stormed Colchester, and among the captives he made were his own daughter and the child which she had borne to Conan. In vain had the young chieftain begged that his wife and baby should be returned to him. In vain the young British woman tearfully prayed that she might go with her husband.

"They are my child and grandchild," Caswallon had said, "and they shall live with me until your father acknowledges me as his overlord."

This was a very high-handed way of bringing about a lasting peace, and it did not succeed. Maddened by the

wrong done to him, Conan went over to the invading Romans, and induced his father to make an alliance with Julius Cæsar.

"I will lead your army safely to Caswallon's stronghold," he said to the great conqueror, "if, instead of taking him in triumph to Rome, you will leave



Conan saw that she was his own daughter.

him in my hands." And to this Cæsar had agreed.

In spite of the insulting way in which the Roman had now spoken to him, Conan was still bent on avenging himself on his father-in-law. For some time he roamed in the dark forest, brooding over his injuries. Then lighting on a path, he moved warily on towards Verulam, to see if the way was clear for the advance of the Roman army next morning. Drawing his tartan closely

round him, so that it should not catch in the brushwood, he went forward as softly as a Red Indian. Though born by the seashore, he had as much knowledge of woodcraft as the people who dwelt in the inland forests. Even in the darkness he could tell, from the way in which the wild creatures around him behaved, if any man besides himself was about. Time after time he stopped for a minute to listen, and, hearing nothing, crept onwards to Verulam. He was about two miles from the British stronghold when a strange sound startled him. Hiding under a bush, he put his ear to the ground.

"It is a child crying," he said, as he arose. "Lost, no doubt. If it comes from Verulam it could tell me more than I could find out myself."

Very cautiously he made his way to the spot. It was too dark to see clearly, but he could just distinguish a tiny figure sitting beneath a tree.

"What is the matter, little one?" he said.

The little girl looked up. She was frightened for a moment, but then she smiled. Conan's voice was deep, but it was gentle, and he looked strong and comforting in the dark wood. She stole closer and gently touched his big hand.

"I came out to look for my father, and I can't find the path back to Verulam."

"Who is your father?" said the young chief.

"Conan of Colchester," replied the child.

It was a rash thing to do in Caswallon's country, but Conan sat down with the child on his knee, and took out flint and tinder and made a torch of dry wood, and stared at the waif. It was a girl, fair-haired and blue-eyed, and charming to look upon. She was certainly the child of a great chief, for, instead of being clad in skins, she wore a gown of fine red linen, and round her neck was a necklace of precious amber.

"Why do you want to find your father, Mora?" exclaimed Conan, now strangely moved.

Mora then recognised her own father. Throwing her little arms about his neck, she snuggled close up to him, half crying and half laughing, and said:

"Oh, daddie, daddie! I am glad I found you. Mammie is crying her eyes out because they want to hurt you."

"Who want to hurt me?" said Conan.

"Grandfather and his chiefs," said Mora. "But mammie won't let them, and I won't let them. Why, daddie, you are crying just as mammie does."

The torch Conan had lighted went out, and he sat in the dark, wild forest hugging his child in his arms, while his tears fell upon her head. Now his bitter feelings against his father-in-law disappeared. He was ashamed of himself, and his one thought was to save his country and repair the harm that he had done by helping the invaders. Taking his daughter in his arms, he entered Verulam before day-break, and faced the terrible anger of his father-in-law.

"Kill me if you like!" cried Conan. "I deserve it. But hear me first. You must take to the woods. You don't know how strong the Roman is, but I do. He will storm Verulam in an hour, but he cannot fight in the thick forest."

Caswallon would not listen to his son-in-law.

"I will beat off Cæsar," he exclaimed, "and then I will give you to the Druids to be dealt with as a traitor!"

Early in the morning the Romans arrived, and, after driving in the war-chariots of the Britons, they formed a "tortoise." Each legionary raised his mighty shield above his head in such a manner as to overlap the shield of the soldier in front of him; the Roman army thus became a vast, strange, crawling creature protected by strong, brazen scales against the javelins and arrows vainly hurled down by the besieged Britons. In a short time Verulam was taken by storm at two points, and the legionaries then lowered their shields and rushed into the town—and found it empty.

For Caswallon had, at the last moment, followed the advice of Conan, and fled with all the people to the trackless forest. There the Romans dared not follow him. They camped on the outskirts of the wilderness, hoping that their foes would be forced out in search of food. The Britons were more used to living in the woods than in cities, and the Romans

might have had long to wait if Conan had not brought his brave father-in-law on a friendly visit to Julius Cæsar a few days

afterward. A peace was made between the Britons and the Romans which lasted for nearly eighty years.

THE LOVE OF A MOTHER'S HEART

RIZPAH SORROWING FOR HER SONS

RIZPAH had been loved by that strange and romantic man who stood head and shoulders above the tallest men in Israel, was capable of the most splendid daring, was subject to moods of the blackest melancholy, was now the shouting and trampling captain of furious war, and now the rapt and silent dreamer listening to sad music—Saul, King of Israel, the first man to reign over the most wonderful and interesting people in the whole world. Rizpah had been loved by this man, had been taken by him to live in a palace, had grown up amidst scenes of splendor and magnificence, had become surrounded by pomp and every imaginable luxury.

But she remained true to her womanhood. There was one passion in her heart which neither the idleness nor the glory of court life could subdue. She loved her children.

To this noble woman the pleasures of a life at the king's court were as nothing to the joy of watching her little sons playing with their toys, telling stories to each other, running races in the gardens, or lying asleep in their beds with flushed faces, tumbled hair, and parted lips. As they grew older, her love for them increased.

She took a glowing pride in the beauty of their faces, the grace and strength of their bodies, the reckless daring and unflinching courage of their minds. She would dream dreams of their future glory. She would picture to herself great national pageants, where her sons should figure as the darlings of the people, the worshipped heroes and adored captains of the house of Israel. Middle age had no fears for this devoted mother; her beauty would fade, her strength would diminish, but she would have the love and devotion of these splendid sons; and when she was old, and bowed, and dim-sighted, and all the glory of her life had departed, she would have at her knees and would hold on her lap and would press to her withered cheeks the young

sweet faces of her children's children. So there was nothing but joy and delight and satisfaction in the heart of Rizpah.

But suddenly Rizpah's life was saddened, and for her there was nothing but darkness, ruin, and death, as is related in the following story from the Bible.

A famine had fallen upon the land in which David was king. The cause of this calamity was attributed to a crime of the dead Saul. He had put to the sword people of the Gibeonites without cause, and only in the base hope of standing well with his own people of Israel. The Gibeonites were living in the land on a pledge of safety which the Israelites had made them when they conquered the country. For this reason, it was held, famine had come upon the land. Therefore David determined to make peace between Israel and the Gibeonites, that the crime of Saul might be wiped off the earth, and the frown of God be removed from the face of the sky. Consequently he sent for a number of the Gibeonites, and asked, "What shall I do for you, and wherewith shall I make atonement?"

The Gibeonites replied, "We will have no silver nor gold of Saul, nor of his house; neither for us shalt thou kill any man in Israel."

David pondered some time over these proud and honorable words, and then said, "What ye shall say, that will I do for you."

Then they answered, "The man that consumed us, and that devised against us that we should be destroyed for remaining in any of the coasts of Israel—let seven of his sons be delivered unto us, and we will hang them up unto the Lord in Gibeah of Saul, whom the Lord did choose."

"I will give them," said David.

Now, the word "son" included the sons of the sons of Saul, and one of these grandsons was the child of Jonathan. But David remembered his great love

for Jonathan, remembered the vow they had made together at parting, and he could not bring himself to make a victim of this youth. So Jonathan's son was spared, and among the seven sons of Saul delivered over to the Gibeonites were the two sons of Rizpah.

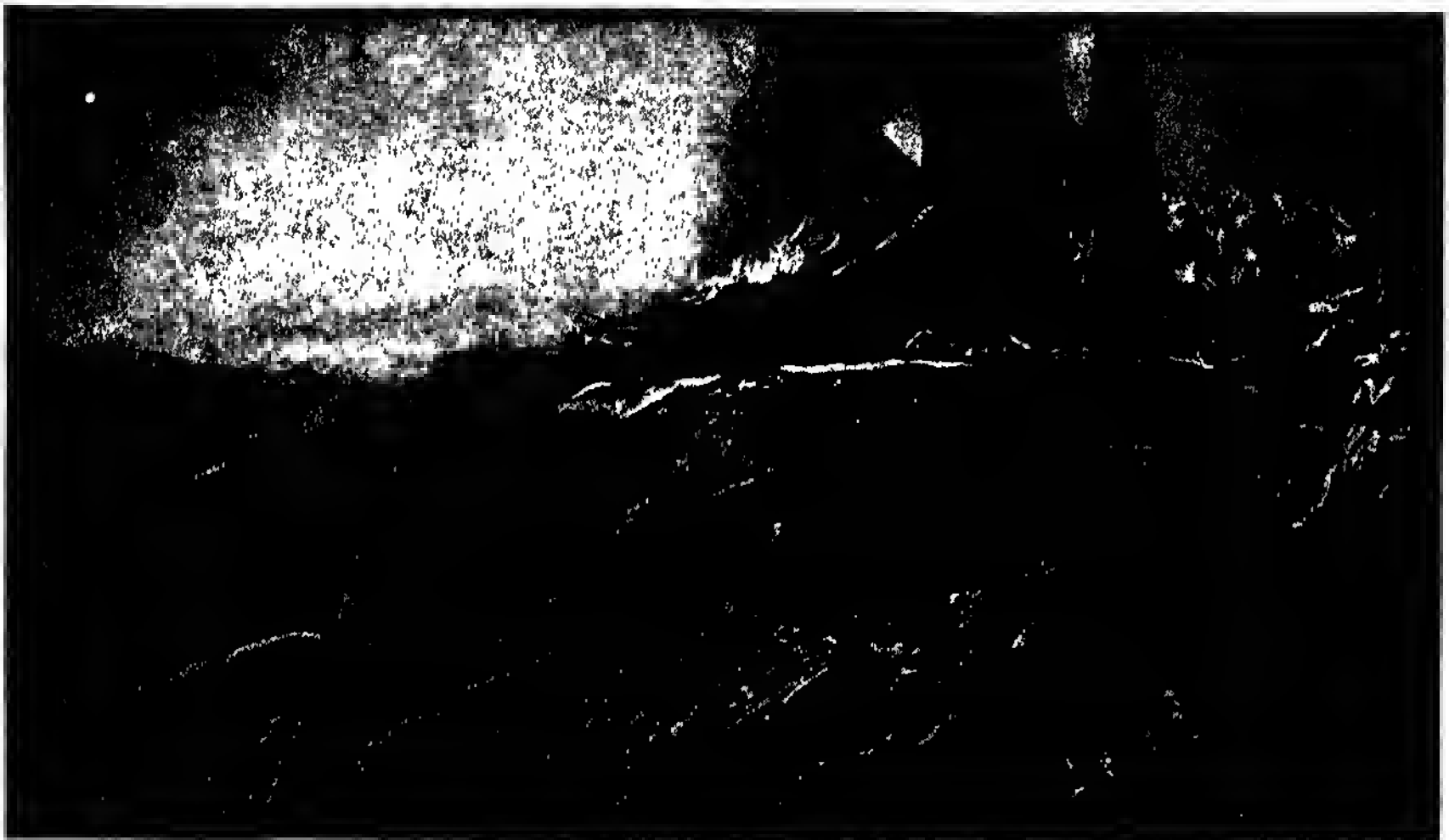
It was harvest time. From a sky of unstained blue the pitiless sun beat down upon fields of whitening barley.

A scream of inexpressible agony tore the air. A shriek of anguish, that froze the blood of men, and echoed in the souls of all who heard it.

her head, uttering their hideous cries, and attempting to strike further terror into her heart. Away in the distance could be heard the roar of lions and the barking of wolves, waiting for the night.

She spread the sackcloth upon the rock, seated herself upon it, and with her arms resting on her knees, her eyes set in unutterable woe, watched the birds and thought about the dead.

The day passed and the night came, and she stood up under the moon and stars, a dark, solemn majestic figure,



RIZPAH SAT WITH HER ARMS RESTING ON HER KNEES

This picture is from the painting by Mr. Briton Riviere, R.A., and is reproduced from an engraving by Mr. H. Scott Bridgwater.

The procession, carrying gibbets, passed away from the city, and halted on the top of a hill. The gibbets were erected. In a few minutes seven of the sons of Saul were dead bodies hanging in the air.

And now, when the Gibeonites had departed, and the dead men were left hanging alone on the hill-top, there were seen in the air the black wings of vultures, and far off in the distance the forms of beasts of prey. From the city there issued a woman with eyes set in unending melancholy, and such a grief on her lips as caught the breath and paled the face of all who saw it. Alone and despairing, she passed out of the city, dragging sackcloth along with her, a picture of abject misery.

The cruel vultures wheeled round over

alone with the dead. Many shapes of terror moved round about her, growls of baffled rage reached her ears, the ropes of the scaffold creaked in the night silence.

* * * * *

The people who were witnesses of this scene reported it to King David; for, day after day, and night after night, the mother watched by the bodies of her sons, and swept the birds away with her cloak.

Then David, remembering all the past, went himself for the dead bodies of Saul and Jonathan, and took the bodies of the dead sons, and gave them royal burial, and prayer was made to God for the people of Israel. But as for the heart of Rizpah—it was broken.

CONTINUED ON PAGE 6017.

THINGS TO MAKE AND THINGS TO DO



A LITTLE SHADOW THEATRE

BY means of scissors, paste, cardboard, paper, and a piece of wood, any clever boy or girl can make an amusing toy that will provide plenty of fun for a Christmas or New Year party, and will be equally interesting for grown-ups and for children. The toy is a shadow puzzle game, and we make it in this way. We take some stout and stiff cardboard, and cut out two pieces 15 inches high by 6 inches wide. Then we cut another piece 15 inches high and 18 inches wide, and from the centre of this larger piece we cut out a space about 12 inches high and 12 inches wide, so that what is left will look very much like the wings and curtain of a theatre. We now take two strips of gummed paper, and fasten the two narrow pieces of card to the larger piece, one on each side, so that the paper will form hinges, and the side pieces can be turned at right angles to the middle card. Strips of linen pasted or gummed on to the card make even better hinges than the gummed paper.

The picture on the next page shows how this screen-frame will look. To make it neat we can cover one side of it with black paper—not the side on which the linen or paper strips are pasted. Then, turning the screen over, we paste over the opening which we have cut out a piece of ordinary semi-transparent tracing-paper. The paper should be as white as possible. The screen is now ready, and we can put it aside while we make the rest of the toy.

Now let us cut out four pieces in stiff cardboard, each about three inches high, and these should be, if possible, rather fantastic and humorous, as that will add to the fun of the game. Any kind of upright figures will do, and may be copied from books, but if there is any difficulty about drawing men, four upright pieces

CONTINUED FROM 5743

of card may be cut into any kind of irregular shapes, and will serve for the purpose of the game.

A piece of wood, 12 inches long by about 6 or 7 inches wide and $\frac{3}{4}$ of an inch thick, is wanted for a stand for these figures, and running the whole length of the board we cut six grooves at regular intervals, just wide and deep enough to hold the figures upright when they are stood in these grooves.

We now take some stiff paper and make four extinguishers, by rolling up the paper in the same way as for a grocer's sugar-bag, sticking down the edge or flap, and cutting the opening evenly all round. Then we sew a little ring in the top of each. The extinguishers should be about 4 inches high and 2 inches in diameter at the bottom.

Next we get a thin stick about 2 or 2½ feet long, and in the end put a nail or drawing-pin, and to this fasten a straight piece of wire about 12 inches long with the end turned up slightly to form a hook. The wire should be stout enough to remain stiff and straight. All we want now for our game is an ordinary candle in a candle-stick.

Any number of people may play at puzzle shadows. Stand the screen on the table, with the wings folded at right angles, as shown in the picture on this page, and put a lighted candle some distance at the back of it. One who does not take part in the game acts as master of the ceremonies. He puts the wooden stand between the screen and the candle, and then places the four figures in any of the grooves—not, of course, all in the same groove.

All other lights in the room except the candle are turned out. The first player now takes his place before the screen, and

he must on no account look round or over it to see what is behind. Hooking the wire holder into the ring of one of the extinguishers, he lifts this over the top of the screen, and, guided only by the shadows of the figures and extinguisher on the paper front of the screen, he tries to put the extinguisher over one of the figures. So long as the shadow of the extinguisher is above the shadows of the figures it may be moved about in any direction, but directly it touches or begins to cover the shadow of a figure it must be let down at once. The holder is gently unhooked, and another extinguisher is lifted over the screen.

Great is his astonishment when he finds, as is usually the case, that instead of extinguishing all four figures, he has set down the extinguishers

at quite long distances from them. Nothing is more deceiving than the shadows on the screen, and as each player takes his turn the candle or the figures are moved so that the shadows do not appear in the same places as before. The player who covers most figures wins the game, or, if it is desired to prolong the game, points may be given for each figure covered, and these points added up at the close.



THE FRAMEWORK OF THE THEATRE

It is essential that the master of the ceremonies gives no indication either by word or

by the expression of his face as to how a player is succeeding while he is endeavoring to cover the figures; and it is important, too, that the candle be kept well back, so that the extinguishers, as they are moved about, cannot get into the flame and catch fire.



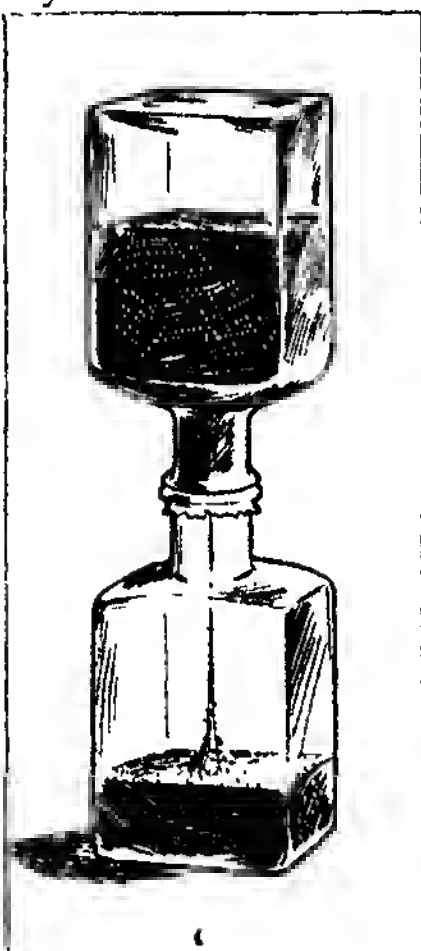
THE LITTLE MEN FOR THE SHADOW THEATRE

AN EASY WAY TO MAKE AN HOUR-GLASS

IN the old days time was measured by an hour-glass—that is, an object very much like an egg-boiler, only larger. These were two bulbs of glass with a small passage between them, and one of the bulbs contained a quantity of sand that took exactly one hour to run through the opening into the other bulb. Then, when it had all run through, the hour-glass was reversed, and the sand ran back again into the first bulb, thus measuring another hour, and so on.

Any boy or girl can make an hour-glass without much expense. We take two bottles of the same size and shape a square and squat shape is the best. Then we take a quantity of the finest washed and sifted sand, and put this into one of the bottles. To get the sand we may buy the finest sand at a paint-shop, and carefully sift it through coarse muslin so as to get only the finest. Now over the neck of the bottle we tie a piece of fine indiarubber bladder, or a piece of parchment will serve the purpose and prick a hole in it

sufficient for the sand to trickle through in a fine but constant stream. Turning this bottle upside down on top of the other, as shown in the picture, we let the sand trickle for an hour and then take the top bottle off. We remove the indiarubber covering, and tie it on the second bottle, into which the sand has run for exactly an hour. Then, after removing the surplus sand from the first bottle, we invert the other over it, and let the sand gradually trickle back, checking it carefully to see that it takes exactly an hour to run through. Then, keeping the bottles one over the other in the position shown in the picture, we bind some linen round and round the necks to keep them together, and our hour-glass is complete and ready for use. In removing the indiarubber covering from one bottle to the other we must be careful not to tear the hole any larger, or the sand will take less than an hour to pass through again. Also, before beginning, sand and bottles must be perfectly dry, or the sand will not flow evenly through the hole.



GOOD GAMES FOR A CHRISTMAS PARTY

TO make a Christmas party a thorough success there is nothing like having plenty of variety in the games. There is no chance then of the boys and girls getting tired.

A very good game for a large or small party is that of "guessing with the wooden spoons." One of the party—a girl, for instance—is blindfolded, and sits upon a chair. She is then given two large wooden spoons, such as are in common use in every kitchen for stirring puddings, cakes, and so on. One after another the other boys and girls come up to the blindfolded sitter and stand or kneel before her, and she has to guess who each one is by simply feeling him or her with the wooden spoons, as shown in the first picture on this page.

The task is very much more difficult than it looks, and there is great fun as the spoons go over the face and body in the attempt of the blindfolded player to discover the identity of the other.

Of course, any outburst of laughter when the spoons are going over our faces would disclose our identity, so we must keep perfect silence. When anyone's identity is guessed, he has to be blindfolded and must take the spoons. We must be careful when using the spoons to touch another player with them quite lightly, so as not to hurt him, and

of half a sheet of notepaper, and kneels down on one side of the tapes, and a boy kneels down on the other. The girl then has to try to fan the egg-shell across the tape on the boy's side, and he has to try to blow the shell back across the tape on the girl's side. The one who first drives the egg across his partner's line three times wins the contest. Nothing must be used by the girl but the paper fan or her hand, and the boy, on his part, must simply blow with his mouth.

Blowing out the Christmas candle is a good old Christmas game that is amusing. A lighted candle is placed upon a table or chair, and each player is, in turn, blindfolded and stood with his back to the candle, about two feet away. He is then told to take three steps forward, turn round three times, take four steps towards the

candle, and then blow it out. In the majority of cases the blindfolded player will lose all idea of distance and position, and when he blows will be in quite another part of the room from that in which the candle stands. Of course it is wise to have a player or two standing by the side of the candle to prevent any blindfolded player who does happen to get near it from going too close to the light as he might have an accident.



GUESSING WITH THE WOODEN SPOONS



BLOWING THE EGG ACROSS THE LINE

any player who wears glasses should remove them.

Another good game for a Christmas party is that of blowing the egg. Two pieces of cotton or tape are stretched across the carpet. An ordinary hen's egg—not too large—which has had the entire contents removed without cracking the shell—is laid exactly midway between the tape lines. A girl player then makes a little paper fan out



FANNING THE EGG WITH A PAPER FAN

A game requiring a good deal of ingenuity is that of Introductions. The idea is that a father and mother, and son or daughter three persons in all—are being introduced to the company.

The names have to be selected in such a way that the last name will form a familiar word, and this requires skill if it is to be done well. Here are some examples.

Mr. and Mrs. Terry and Miss Terry (Mystery).

◆◆◆◆◆ THINGS TO MAKE AND THINGS TO DO ◆◆◆◆◆

Mr. and Mrs. Chovy and Anne Chovy (Anchovy).

Mr. and Mrs. Builder and Master Builder.

Mr. and Mrs. Moore and Owen Moore (Owing more).

Mr. and Mrs. Fulness and Grace Fulness.

The game of Magic Music is exceedingly interesting for a large Christmas party. One player goes out of the room, and some small object is hidden. Then the player is called into the room, and he has to find the object, being guided to the place by the music.

When the music gets softer the searcher is getting away from the hidden object; and, on the other hand, when the music gets louder it is an indication that he is getting near. The person at the piano must, of course, be a good player, must know where the object is hidden, and must have a clear view of the searcher as he goes from place to place.

Still another game that causes great fun and gives plenty of opportunity for ingenuity is called "What is My Thought Like?"

One player goes to all the others in turn, and asks, "What is my thought like?" and each player mentions some object. Then the thinker declares his thought, and each of the other players in turn has to say why this thought is like the object he mentioned. The game might go on something like this.

"What is my thought like?"

Sugar, a feather pillow, a blush rose, a kitten, air, and so on, are some of the answers given.

"I thought of a little girl of three. Why is she like sugar?"

"Because she is sweet."

"Why is she like a feather pillow?"

"Because she is soft to the touch."

"Why like a blush rose?"

"Because she is pink."

"Why like a kitten?"

"Because she likes play."

"Why like air?"

"Because she is light."

And so the game goes on.

A JUMPING FROG MADE FROM A WISHBONE

WE all have poultry at Christmas-time, and there are plenty of merry-thoughts, or wishbones, to be had. It is quite easy from one of these to make a jumping frog; something like those wooden ones that are sold in the streets of any city. We take the wishbone, and first of all thoroughly clean it, leaving it a day or two before using. Then we take a piece of strong, thin string, and, doubling it, tie it securely to the two arms of the bone about an inch from the ends, as shown in the picture.



Now we take a strip of wood a little shorter than the bone, and about half an inch from one end we cut a notch right round. Slip the stick half-way through the doubled string, midway between the two arms of the bone,

and turn the wood round and round until the string is twisted up and shows a strong resistance. Then pull the stick through until the string clings round the notch. Cut out

of thin cardboard the rough resemblance of a frog, and stick this with glue or mucilage to the top of the wishbone. All that is now needed is a touch of glue on the underside of the bone where the end of the stick will touch it when it is pulled over as in the picture. Having

pulled the stick over, lay the bone, or frog, on a table, and in a moment or two the glue will cease to hold, and the springiness of the twisted string will cause the bone to jump quite a distance.

HOW TO TRIM A CHRISTMAS-TREE

ALL boys and girls thoroughly enjoy a Christmas-tree, and, indeed, Christmas would not seem Christmas without the familiar tree. Perhaps the most enjoyable thing about the Christmas-tree is the trimming of it, and a few general hints upon how to do this and how to select a good tree will be helpful to us. First of all, in selecting a tree we should see that the stem is firm, the tree well shaped, the branches drooping gracefully, and that these branches are fairly firm, so as to support properly the things hung upon them.

It is a great mistake to overload a Christmas-tree, and heavy articles should not be bung upon the branches, but should be arranged round the base of the tree. There should always be plenty of candles on a tree, and these should hang perfectly upright, or we shall find that so soon as they are lighted the grease will drop upon the tree and table. There should also be a large number of silvered

balls, to reflect the light of the candles. These at once give a brilliant and festive appearance to the tree.

We must be very careful not to hang any flimsy or inflammable toys above the candles, for when the candles are lighted the toys bung immediately over them might catch fire, and the tree would soon be ablaze, endangering the house.

At the top of the tree we place a Father Christmas, dressed in bright scarlet; and the toys should be arranged at intervals, the articles of different sizes and shapes being placed so that the tree looks well balanced.

The tree should be placed in a fancy flower-pot, or, if an ordinary red earthenware pot is used, this may be covered with crinkled colored paper. To light the candles on a Christmas-tree a long taper will be found the best thing to use, and to put them out it is wise to have an extinguisher tied to a stick, but on no account must you blow them out.

SIMPLE EXPERIMENTS WITH AIR AND WATER

WE can learn a great deal of science from the most familiar objects in our homes, and an interesting half-hour may be spent in performing simple experiments that will teach us much that we ought to know. The following tricks and experiments can all be performed without buying any special apparatus.

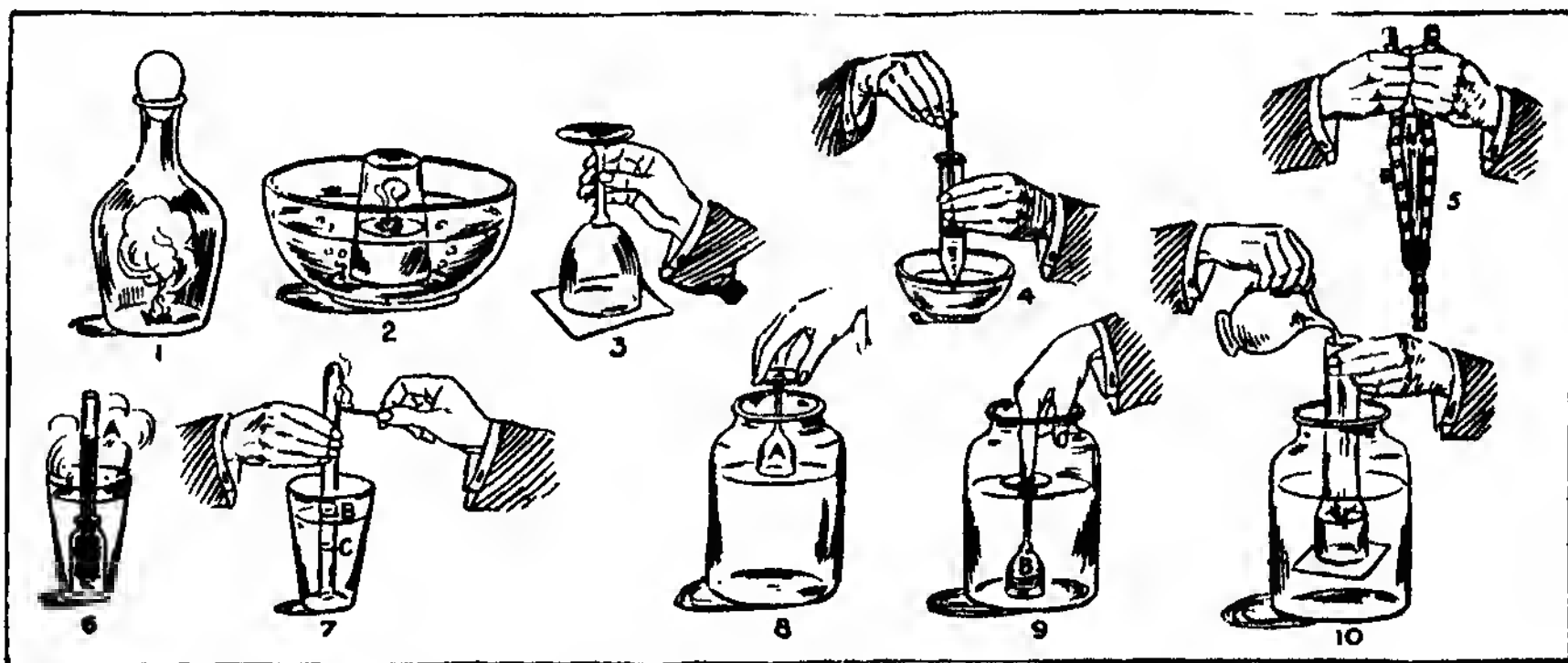
First of all, we can perform an experiment that will show us how the air, that is invisible and does not seem to have any weight, is actually pressing down upon us and upon everything on the earth's surface. We take a wide-necked bottle, such, for example, as the water-bottle in our bedroom, to help us in our experiment, and we also prepare a hard-boiled egg by carefully removing all the shell.

Now we put into the bottle a piece of lighted paper, and, after a second or two, place the egg in the neck of the bottle as though it were the stopper. The egg will, of course, remain there just as if it were in an egg-cup. At

fact that the heat from the lighted paper has expanded the air, and the glass will not hold it all. A few moments after the water is seen to rise in the tumbler.

Still another experiment will prove that the air exercises a pressure, not only downwards, but upwards as well. We take a wine-glass, and fill it carefully up to the brim with water. Then we take a thin sheet of paper, and place it on top, so that it touches both the surface of the water and the rim of the glass. Now, holding the paper carefully in position, we turn the glass of water upside down, and the water will remain in the glass apparently suspended.

If we should like another experiment to prove the downward pressure of the air, we can use our basin of water again, and take a small ear-syringe such as is found in every house. We fill it with water, and invert it with the point in the water in the basin.



EASY EXPERIMENTS THAT CAN BE TRIED IN EVERY HOME

least, that is what some of us would expect. But if we watch the hard-boiled egg we shall see, after a time, that it is gradually going down the neck of the bottle as though it were being sucked in. Then, suddenly, it will enter the bottle with a loud noise. What is the explanation of this? It is very simple. The burning paper heated and expanded the air in the bottle, and some of it was driven out through the opening at the neck. Then the egg was placed in the neck and the opening was stopped up. Presently the air in the bottle cooled, and, as it lost its heat, it contracted, or filled less space, so that there was a partial vacuum in the bottle, and the air outside pressing upon the egg drove it into the bottle.

There is another simple experiment which shows clearly the pressure of the atmosphere. Take a basin of water, and on the surface of the water let a cork float. Now place on the cork a piece of lighted paper, and over these invert an empty glass, pressing it down gently into the water. Bubbles will be seen to come from under the glass. This is the air being driven out owing to the

Now we press down the rod and empty the syringe. But directly we pull up the rod again the water rushes up and fills the syringe. The reason of this is that the pressure of the air all over the surface of the water in the basin drives the water up into the syringe.

An interesting experiment, this time with a pair of ordinary fire bellows, proves that the pressure of the atmosphere is exerted, not only above and below, but sideways and in all directions. Having blown all the air out, we completely stop up the nozzle and the vent-hole with corks, and then, if the bellows are in proper order and are air-tight, no boy will be able to open them, no matter in what position they may be held. The air outside pressing equally on all sides holds the bellows together.

All bodies, solids, liquids, and gases alike, when heated expand—that is, fill more space—and two simple experiments will show this clearly in the case of liquids and gases. We take a small bottle, fill it with some colored liquid, such as water in which a little Glyco-Thymoline has been dropped, and cork it up. But we must see that the cork is pierced,

and a piece of glass tube, open at both ends, inserted. Now, if we plunge the bottle into a vessel of warm water, as seen in picture 6, the colored liquid will be seen to rise in the tube to A.

In order to show that gases also expand we must use a glass tube closed at one end. We take the tube, which is, of course, full of the gas that we call air, and put it into a tumbler of water, as shown in picture 7. The water rises to a certain point, B. Now we hold a lighted taper to the upper part of the glass tube, and, after an interval of a second or two, the water slowly descends in the tube from B to C.

Another experiment with a wine-glass and a jar of water will show that gases, such as the atmosphere, possess the property of compressibility—that is, they can be pressed into smaller space. We take the wine-glass and invert it on the surface of the water. The glass is full of air, which occupies the whole

of the space A in picture 8. Now we press the glass down to the bottom of the jar, and we see, as in picture 9, that some water has risen in the glass, and the air that formerly occupied the whole glass now fills only the space B, and as none has escaped, this proves that air can be compressed.

There is a simple experiment to show that liquids, like gases, exert a pressure equal in all directions. Take a common glass lamp-chimney and place below the widest opening a piece of cardboard. Hold this against it and plunge the whole into a jar of cold water. Now remove the hand that held the cardboard, and it will be found to remain in position, the upward pressure of the water holding it against the glass. Now pour water gently into the lamp-chimney above; it will be seen that the card continues in position until the water in the glass reaches the level of the water outside the chimney.

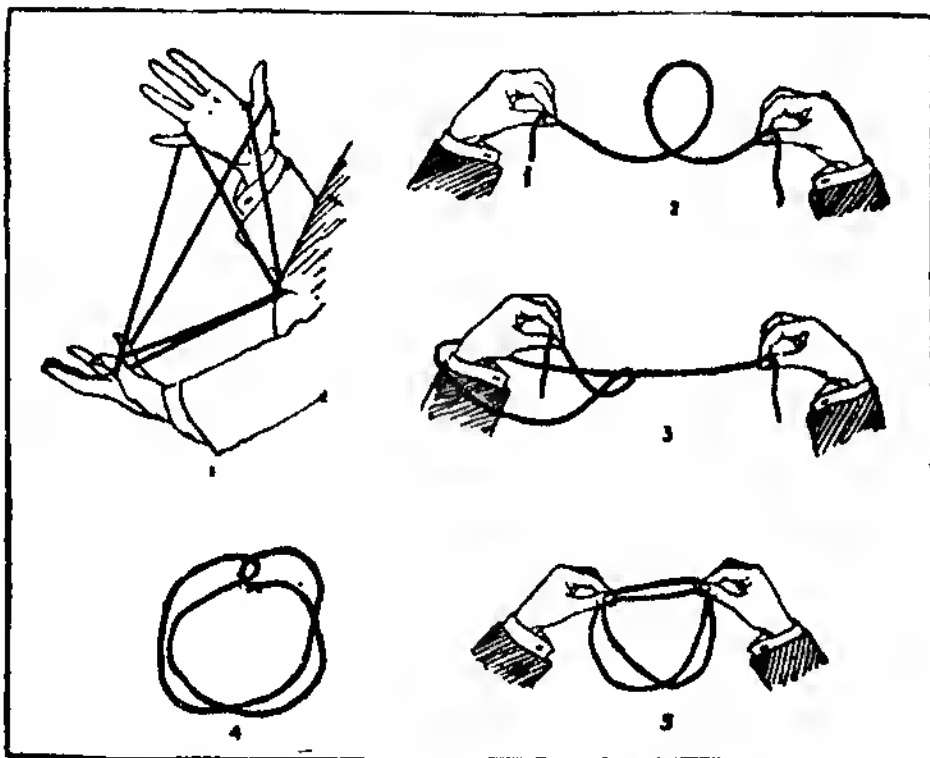
TRICKS TO DO WITH A PIECE OF STRING

HERE is an excellent trick that is quite easy to perform, and needs no other apparatus than a piece of fairly thick string about five or six feet long. We tie the ends together, and then pass the doubled string through a buttonhole of our coat. We then put our thumbs through the looped ends, one at one end and the other at the other, and, having done this, hook our little fingers into the upper strings of the opposite hands. If we draw our hands outward the appearance will be as seen in picture 1, and the string will look so entangled as to suggest that it will be a task of some difficulty and take some time to release it from the buttonhole. But, as a matter of fact, the release may be made almost instantaneously, by simply disengaging the right thumb and left finger, and pulling the hands apart. If this be done quickly, it will appear to those looking on that the string has torn the buttonhole. Their astonishment on finding it intact will make it quite worth while the trouble it gave us to practise this ingenious little trick.

Another trick with string that can be done quite easily after a little practice is that of tying a knot on the left wrist without letting the right hand get near it. We take a piece of fairly thick and heavy string that is also very pliant; holding one end between the finger and thumb of the left hand, we take the other end in the right hand and, with a rapid

jerk, throw a loop toward the left hand, as shown in picture 2. The loop can, with a little practice, be made to fall over the left wrist, as in picture 3, and if, at the moment this happens, the right hand pulls back the end that it is holding, the string will be tied tightly round the left wrist.

A trick that creates a good deal of astonishment is this. Take a piece of string about three or four feet long, and join the ends; then placing one hand through each end, give the string a complete twist, and put into the left hand the end that was in the right hand. The string is now shown, as in picture 4. Passing the right hand quickly along the double string, we hold the place where the string crosses, so as to conceal it, as in picture 5, and we ask a friend to cut the string right through at the part we are holding between our two hands. They do this, and there are four ends, showing that the string must now be in two pieces. Then we offer to join up two of the ends with our teeth; and, putting all four ends in our mouth, with a pass or two, pull out the string, and there is only one long piece. The explanation of this trick is, that owing to the twisting of the string and the particular way in which we hold it, so that the friend must cut somewhere near our right hand, the string is cut into a long piece and a very short piece. We put the four ends in our mouth, and with our tongue remove the small piece.



How to perform simple tricks with string.

THE MEANING OF HALLOWE'EN

HALLOWE'EN, which brings to most of us visions of fun and jollity, is an old, old festival. The old Romans held it about the first of November in honor of Pomona, the goddess of fruit trees. In Britain the Druids celebrated a festival at the same time in honor of the sun god, and in thanksgiving for harvest, and the two festivals seem to have become one in the minds of the Britons. When the people became Christians the early Church Fathers wisely let them keep their old feast, but gave it a new association by holding it in commemoration of all departed souls. Thus the eve of the festival came to be called All Hallow E'en. The name comes from

the old English word halwe, or as we now say, holy.

Many beliefs grew up about this feast, such as the belief that on this one night of all the year, the spirits of the departed were allowed to visit their old homes. In many parts of the old countries food was left, hearths were carefully swept, and chairs were set in order before the inhabitants of the villages went to rest.

Many of the old superstitions, some of them going back as far as pagan times, came to this country with our Puritan ancestors, and though they lost their meaning long ago, we still keep some of the quaint old customs.

THINGS TO DO ON HALLOWE'EN .

DUCKING FOR APPLES

GET ready two tubs, each half filled with water, one for the boys, one for the girls. Put in each a number of apples with long stems, each stem having a name very securely attached to it on a slip of paper. The fun consists in trying to catch one of the bobbing apples with the teeth; the apple must not be caught by the stem. The name attached to the apple is supposed to be the name of the future helpmeet of the youth or maiden who contrives to fish it out of the water. The hands must be fastened behind the back for this trick.

BURNING NUTS

Name two nuts and place them on a shovel held over an open fire—a gas log will do. Repeat this charm:

Nuts I place upon the fire,
And to each nut I give a sweetheart's name.

If either of the nuts hisses or steams, it shows that the owner of the name has a cranky temper. If the nuts pop together, and toward each other, the friendship between the two persons will probably increase and grow warmer. If, however, one does not pop at all, or they fall away from each other, the feeling will grow cooler and the friends will be divided.

APPLE AND CANDLE TRICK

Hang by a stout cord, attached to a hook in the ceiling, a short stick—about eighteen inches long. The stick must be fastened so that it will balance horizontally. At one end of the stick fasten a short piece of lighted candle, at the other fix an apple. Set the stick revolving rapidly, and let the players try to snatch the apple from it with their teeth.

APPLE PARING

Peel an apple without breaking the skin, swing the paring round your head three times and let it fall to the floor over the left shoulder. The letter formed as it falls to the floor will give the initial of your future spouse.

COMBING HAIR BEFORE MIRROR

Comb your hair at midnight standing alone before a mirror by the light of a candle. If a face appears, in the glass, looking over your shoulder, it will be that of your future partner.

WINNOWER GRAIN

Steal out into the garden or barn alone near midnight and go three times through the motion of throwing grain against the wind. The third time your future spouse will appear in some mysterious way, or you may gain some intimation of his or her station in life.

PROPHECY BY FEATHERS

Take three small, fluffy feathers. On three small pieces of paper write the words "blonde," "brunette" and "medium" and attach these pieces of paper to the ends of the little quills. To make the test hold up the feathers by their tops, and with a puff of breath send them flying towards the table. The one that falls nearest to you tells the complexion of your true love. The test should be made three times to make the prophecy quite sure.

GHOST WRITING

With a perfectly new pen, dipped in pure lemon juice, write a number of charms, or prophecies, on small pieces of paper, and let them dry, when the writing disappears. Fold the slips of paper, and place them in a basket, from which each player draws one. When the pieces of paper are held over the flame of a lamp or candle, the heat causes the writing to reappear, and the prophecy can be read. This trick may be made quite mystical by appropriate ceremonies, such as reading the prophecies in a room dimly lighted by a small colored lamp over which the slips must be held. One person should read the slips one by one, and can add to the effect by reading very slowly and solemnly. The reader can be one of the players who has slipped out and assumed a long cloak, witch's hat, and a small black velvet mask.

CONTINUED ON PAGE 6003.

CÆSAR IN TRIUMPH AND HIS PALACE IN RUIN



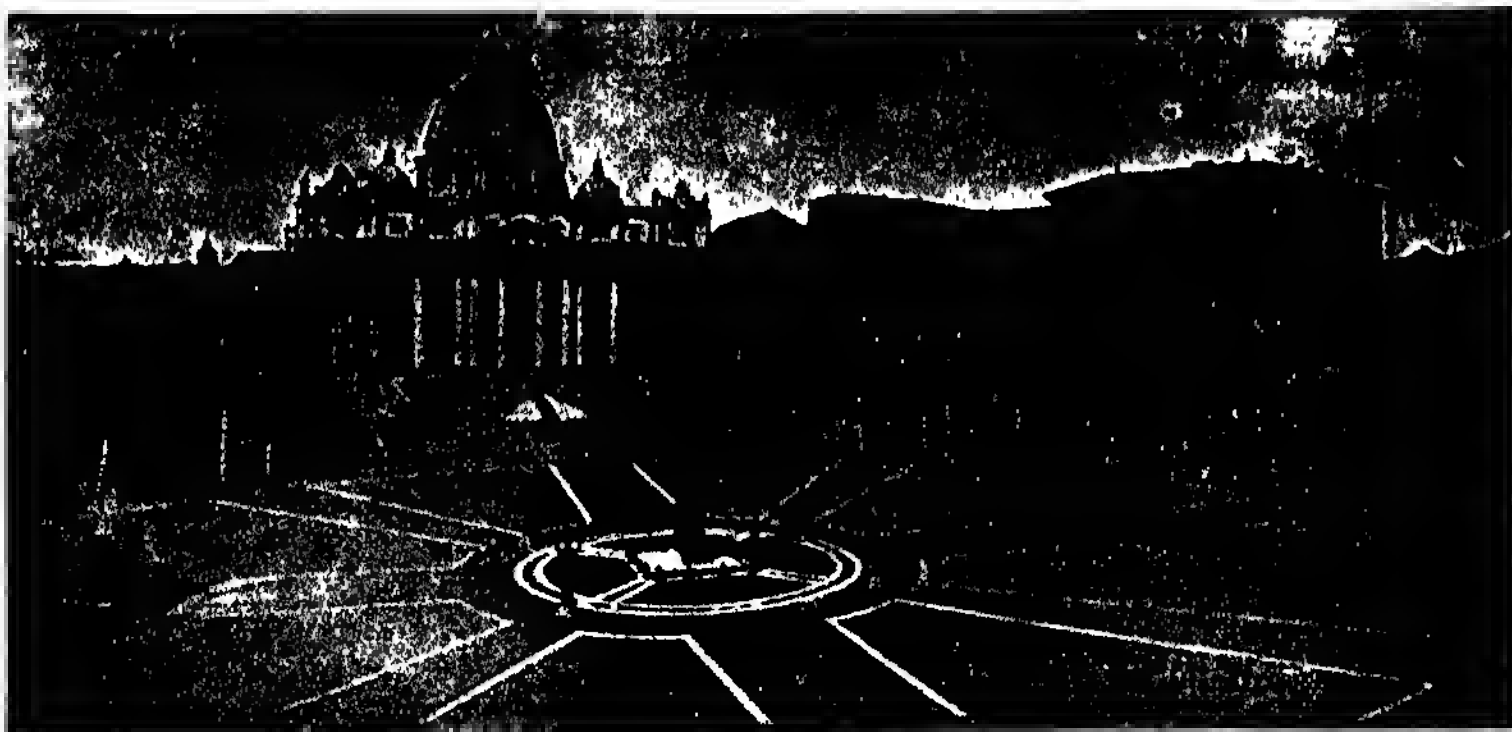
AN EMPEROR OF ROME IN A GREAT TRIUMPHAL PROCESSION

This picture is from the painting by F. W. Topham, and is published by permission of the Corporation of Leicester.



PALACE OF THE CÆSARS ON PALATINE HILL, AS SEEN TO-DAY FROM THE FORUM

The Book of ALL COUNTRIES



The approach to St. Peter's, the greatest church in the world.

WHAT I SAW IN ROME A LETTER FROM THE ETERNAL CITY

IF I were clever enough to write a book, I should like it to be about Rome, and I should like it, I think, to be in three great chapters. There would be, first, the mystery of Fallen Rome, the vast world ruin here at our feet, and its strange spell over us as we walk about it, as of a magnet from a grave. There would be, second, the power of the beauty of Rome, the compelling force that lies in such a store of wonderful things that men can hardly dream of. And there would be, again, the Voice of Rome, the stirring of emotions that must come to the coldest heart that comes to Rome, the central home of our civilization, even though we live in lands of whose existence the Cæsars could not dream.

Rome is, in truth, the Eternal City; we may say of it that its past and its present and its future are one. Time rolls back in Rome as in a book. We walk on the very dust of Cæsar, and every step we take is on historic ground. Fallen Rome, the Rome which ruled the world for 500 years, and had a world-wide empire before Jesus was born, is twenty feet under us wherever we go. Cæsar's palace, Peter's prison, Paul's lodgings—they

CONTINUED FROM 5848



are the foundations of the earth that we tread from morning till noon, from noon till night. The huge area of the Forum has been laid open; here and there elsewhere a fragment has been dug up, a cellar has been excavated, and every day men dig up bits of the Roman Empire.

But in these other places we find only bits, while Rome must be razed to the ground if the wondrous things beneath it are to be revealed.

What these wonders are we know in part. There are no ruins in the world so thrilling as these. The difference between Egypt and Rome is this, that the interest in Egypt is historical, the interest in Rome is human. We know almost nothing of Rameses; we know almost everything of the story of Cæsar.

And Rome brings Cæsar as near to us as Napoleon. We walk across the place where Julius Cæsar lived. We stand on the spot where he was stabbed by Brutus. From the only authentic statue of him, on the Capitol, we can walk down into the great Forum, and read Mark Antony's speech in the place where Antony stood when he made it, and in imagination we can

hear the shouts of the populace in answer to his burning words.

I shall not try to picture the Forum. I suppose there is no other site on the earth in which is concentrated so much history of the world. Out of the little narrow streets you come suddenly upon a great flight of steps, handsome and steep. To the left is another flight, higher and steeper still, with a church at the top. One day, long before any of us was born, a man walked up these steps, sat down in that church, and listened to the monks singing vespers. One of the great hanging lamps was swinging to and fro, and somehow the swing of the great pendulum of Time came into the man's mind: he thought of the Capitol above, and the Forum below, and of all that they had been; and he came down those steps to write "The Decline and Fall of the Roman Empire."

Up the other side of the steps is a winding way to the top for carriages. We run up the central way, past the ancient statues, past the milestone from the Appian Way—which Paul must have looked upon and said, "Still seven miles to Rome"—past the cage of living wolves kept there in memory of Romulus, into the great square. Let us go into the Capitoline museum and spend five minutes in the most amazing portrait gallery in the whole world.

THE ROOM FULL OF EMPERORS

Here, in a little room no bigger than a dining-room, are the Roman emperors, with their wives and families and friends, imaged in marble by those who knew them. You feel here that these men were real, and you know what we mean when we say that Rome impressed its image upon the world for all time. For here is Rome; here are the Cæsars. Here is Julius Cæsar, next to him Augustus and his mother. Here is Marcus Aurelius as a boy, then as a man, then his wife, then his daughter, then her daughter's husband. Then the next emperor, who, they say, was murdered, then the wife who murdered him. Here is Nero's mother, who killed her husband—also here—to make way for her son. Then Nero, who killed his mother.

In the middle is the fine equestrian statue, in bronze, of Marcus Aurelius, the emperor and philosopher who lived before Christianity had made its way, and

might have changed the history of mankind if he had been born a little later. Among the faces that we meet in Rome are some that haunt us as we go about, and we never forget the face of Marcus Aurelius, or the half-sad, thoughtful face of the young Augustus.

IF CÆSAR COULD HAVE MET JESUS

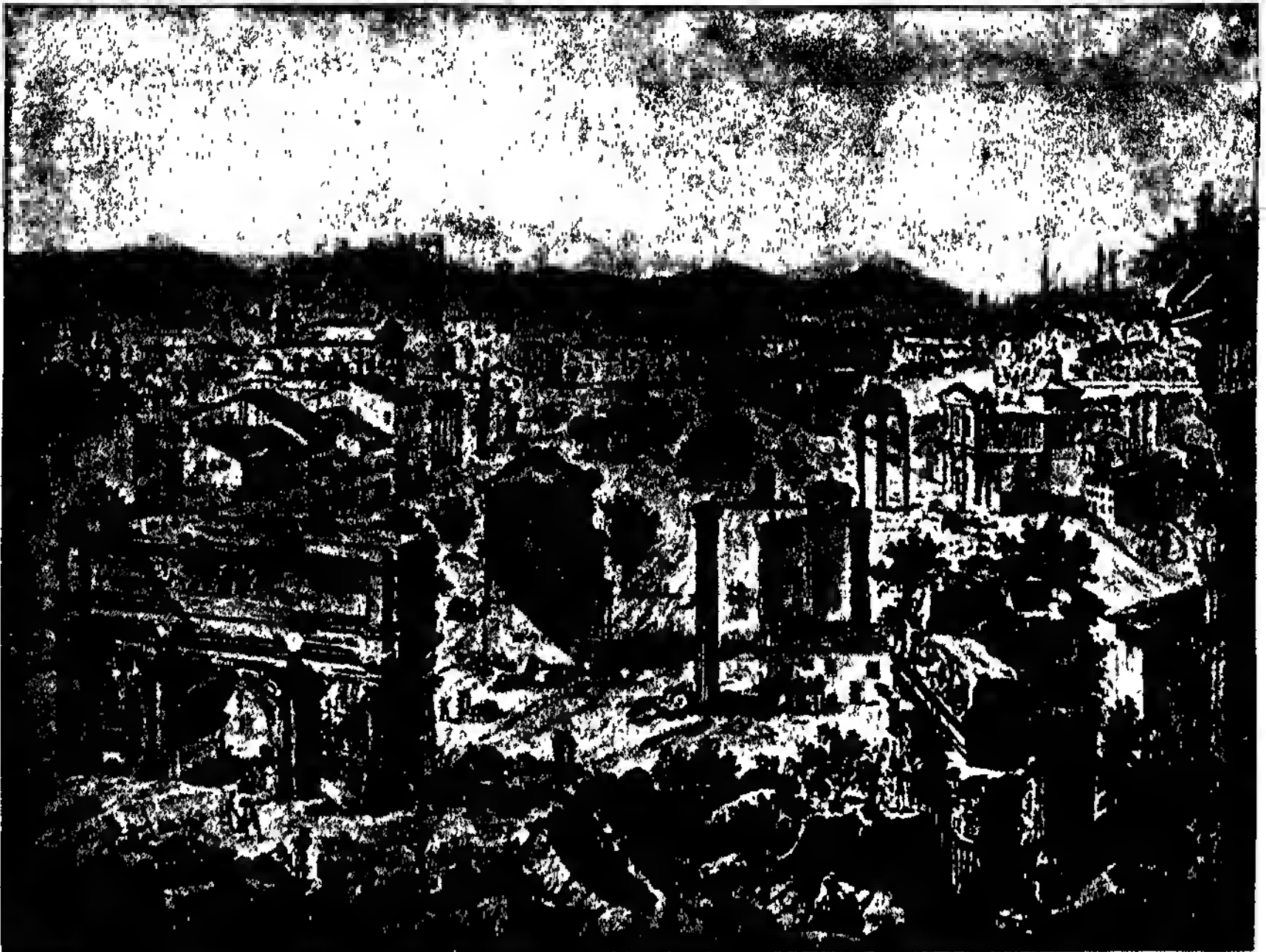
The face of the beautiful statue of Augustus holds all travelers in the Vatican sculptures, and one may wonder whether, if he could have met Jesus, if they could have sat here, in the Capitol, looking over Rome, and have talked for an hour, he would have accepted the religion of Jesus and changed the course of Rome. There might have been no Crucifixion, Jesus would have conquered the world in His own day, the long and terrible history of Christianity might have been utterly different, and the mind of man cannot conceive the differences it might have made. One may also wonder what might have happened if Marcus Aurelius had reigned when Augustus did, and if he could have known Jesus of Nazareth. But let that go: the Crucifixion happened. I saw, this afternoon, the first picture of it in existence—a caricature on marble, drawn probably by a page in Cæsar's palace, 300 years after the Crucifixion happened.

THE WONDERFUL RUBBISH HEAP

Let us leave the Capitol, and come down to the Forum on the other side. It is disappointingly small to the eye at first, but as we sit and think, it grows and grows until it is a very wilderness of doom. We must have in our minds a clear notion of what has happened in the Forum since the days when this place was the central architectural glory of the world. As the history of Rome was submerged by the coming up of other nations, so the very monuments of Rome were buried in the dust of centuries. The palaces of Cæsar fell.

Their temples broke in pieces, and hundreds of years of ruin left Rome a rubbish heap. By the time the twelfth century came, the place where these marvels had stood was an impassable wilderness of rubbish. Orchards and gardens sprang up where temples had been, and the avenues of triumphal processions were covered with teams of oxen. The peasantry grazed their cattle here;

HOW THE FORUM BECAME A RUBBISH HEAP



THE FORUM AS TRAVELERS SAW IT TWO HUNDRED YEARS AGO



THE FORUM AS TRAVELERS SEE IT TO-DAY

mechanics set up their workshops here ; and only a few tops of columns standing out from the earth suggested the wonder that lay beneath. The very name of Forum was forgotten, and so little was to be seen that, even at the beginning of the nineteenth century, Lord Byron wrote of one of the highest columns in the Forum to-day, and called it "the nameless column with the buried base."

ROME COMING BACK TO SIGHT

But when men began to study the history of ancient times from the buildings left by ancient people, they quickly turned their attention to the remains of ancient Rome. Stroke by stroke they have carried on careful excavations. Four street-levels have been found, and the levels of the streets of ancient Rome lie sometimes twenty-four yards down, and never less than eight yards down, from the level of the streets to-day. Broken columns, ends of temples, beautiful porticoes, ruined halls, mosaic pavements, rostrums, altars, fountains, inscriptions, lines of broken statues, houses with three stories, steps leading down to cellars and up to churches, enormous walls of red brick stripped of the marble with which they had been faced, exquisite reliefs, triumphal arches—those great ruins stretch across the vast space which begins at the base of the senators' huge palace and reaches to the arch erected by Titus after the destruction of Jerusalem, with the Colosseum and the Arch of Constantine in the background. Framing it on the right, high up like a ruin in the skies, is the palace of the Cæsars.

HERE ONCE UPON A TIME

The traveler is bewildered as he stands amid this ruin and tries to picture what this place was once upon a time. Here in the Forum, in the days when emperors walked about among their people, were twenty-five acres of halls and temples and triumphal arches ; 1,200 marble columns and 1,000 colossal statues ; miles of porticoes, shops full of treasures, galleries full of great pictures ; the Senate House and the Archives of the Empire of the World. And it was not a show, all this wonder ; it was not only to look at, but to *endure*. It was a thing of beauty made to be a joy almost for ever. So well did they build, those Romans, that columns stand to-day in the streets

of Rome where they were set up 2,000 years ago. So well did they do everything to which they turned themselves, that the great drains out of the city are in use to-day, 2,000 years after they were made.

The mind simply cannot picture the Colosseum as it must have been, yet palaces and temples and tombs have been made of marble taken from this single ruin. Twelve thousand captive Jews are said to have been engaged in building this huge place, of which the outside walls alone cost twenty times as much money as St. Paul's. Three times round the outside walls is a mile, and the walls rose high enough towards the sky to hold twenty tiers of seats for 80,000 people, and in the midst of them, on a throne of ivory or gold, sat Cæsar. A thousand beasts were slain in this arena to keep an emperor's birthday, and how many death-cries have gone up from this place none can tell.

Once upon a time there were four hundred kinds of plants among the ruins, and the first seeds of many of them may have come from the cages of wild beasts brought from distant lands. It is a thrilling thing to pull a leaf or to pick a flower that is growing here, for we hold in our hand a living thing that may go back to a great day at the Colosseum, when hungry lions were let loose on the followers of Jesus and St. Paul to entertain an emperor on an ivory throne.

THE CONQUERORS OF ROME UNDER GROUND

And while Rome lived in pomp and splendor in the sun, her conquerors were hiding underground. Down in the tombs were the persecuted Christians, driven to worship, and perhaps to live among the dead. Forty groups of catacombs have been found outside the gates of Rome, cut out sometimes five deep in the ground. The Romans would have laughed if somebody had said that these poor men hiding underground were founding an empire greater than their own.

The great wonder that has grown upon me is the wonder of the Two Empires. Think of the fact that at one time there were in Rome on the same day two such men as Nero and Paul. Nero lived in a golden house. Paul was in chains, in a humble dwelling where, perhaps, he taught Nero's slaves, or toiled at tent-making so that he might buy bread to

THE TERRIBLE COLOSSEUM: AS IT WAS AND IS



THE TERRIBLE SIGHT IN THE COLOSSEUM IN THE TIME OF THE CAESARS
This picture is from the painting by I. L. Gerome, and is published by permission of Messrs. Goupil & Co.



THE RUINS OF THE COLOSSEUM AS SEEN TO-DAY IN ROME

eat. Yet Nero's empire has gone—you can hardly find a fragment of Nero in Rome to-day. Paul's empire has come, and it endures for ever. Peter and Paul fill Rome to-day.

THE STILL SMALL VOICE THAT CONQUERED ROME

Few things can interest the traveler more than to go from spot to spot and hear the still small voice. You could hardly hear it in Rome 1,800 years ago. Go down into the catacombs and realize that 1,800 years ago there were but a handful of Christians in Europe and that many of those who lived in Rome had to hide. They dared not build a church above ground, and so they excavated these catacombs where they might worship God in secret, and bury their dead, and even hide themselves in time of persecution. See their secret chapels, their graves, their paintings on the walls. Their leaders might be torn to pieces by lions in the Colosseum, but before the shouts of the populace had died away, the little bands of Christians met together in the catacombs to comfort one another.

We follow Paul and Peter everywhere; stand where they stood, go into the house where, perhaps, Paul wrote his letter to Philemon, see over the house of Pudens, wonderfully well preserved. We ride along the Appian Way, by which Paul came to Rome. We pass under the gate through which he walked to martyrdom, and follow his footsteps until we come to the church built over the place where he was buried.

THE JEWEL OF ROME

It is to me a wonder that I cannot express that here was a great civilization *before* Christianity, that Christianity came into the very heart of it and was crucified, that the civilization ceased to be, the greatest power in the world broke down, and the persecuted Christianity inherited its greatness, establishing its empire throughout the earth for all ages to come, so that to-day, when the Cæsars are so dead that men store coal in their palaces and drink liquor in their tombs, the great glory of Rome is the tomb of a fisherman whom Nero crucified.

For St. Peter's is the jewel of Rome. We should be careful in calling a thing sublime, but St. Peter's is sublime. Out of a long, mean street, we emerge into the vast square, where George Eliot felt

that nothing small or mean could come. Everybody knows the picture of it, with a tall pillar which supports a cross in the centre of the plaza, and the half-circle of high columns leading to the ends of the facade, about 150 yards in front of you. There are hundreds of these columns in four lines, and through the middle avenue a carriage and pair can pass. Each front column has a statue on the top. The vestibule is approached by a flight of broad steps. Pulling back the heavy leathern curtain which hangs before the great door, we enter the sacred place.

I wish I were able to tell you how vast and beautiful it is. It is twice as large as St. Paul's in London, and it is *light* everywhere. As you walk slowly towards the tomb of St. Peter, under the central dome, the beauty of the place grows upon you and becomes a dream; you lose the world of sense, and live as in a vision.

Perhaps there is no dome like this anywhere. You feel that it is higher and wider than any other dome that has ever been built. It is as light as it can be, and its simple decorations—probably eighty pictures on a soft gold ground, in slanting panels—can be clearly seen.

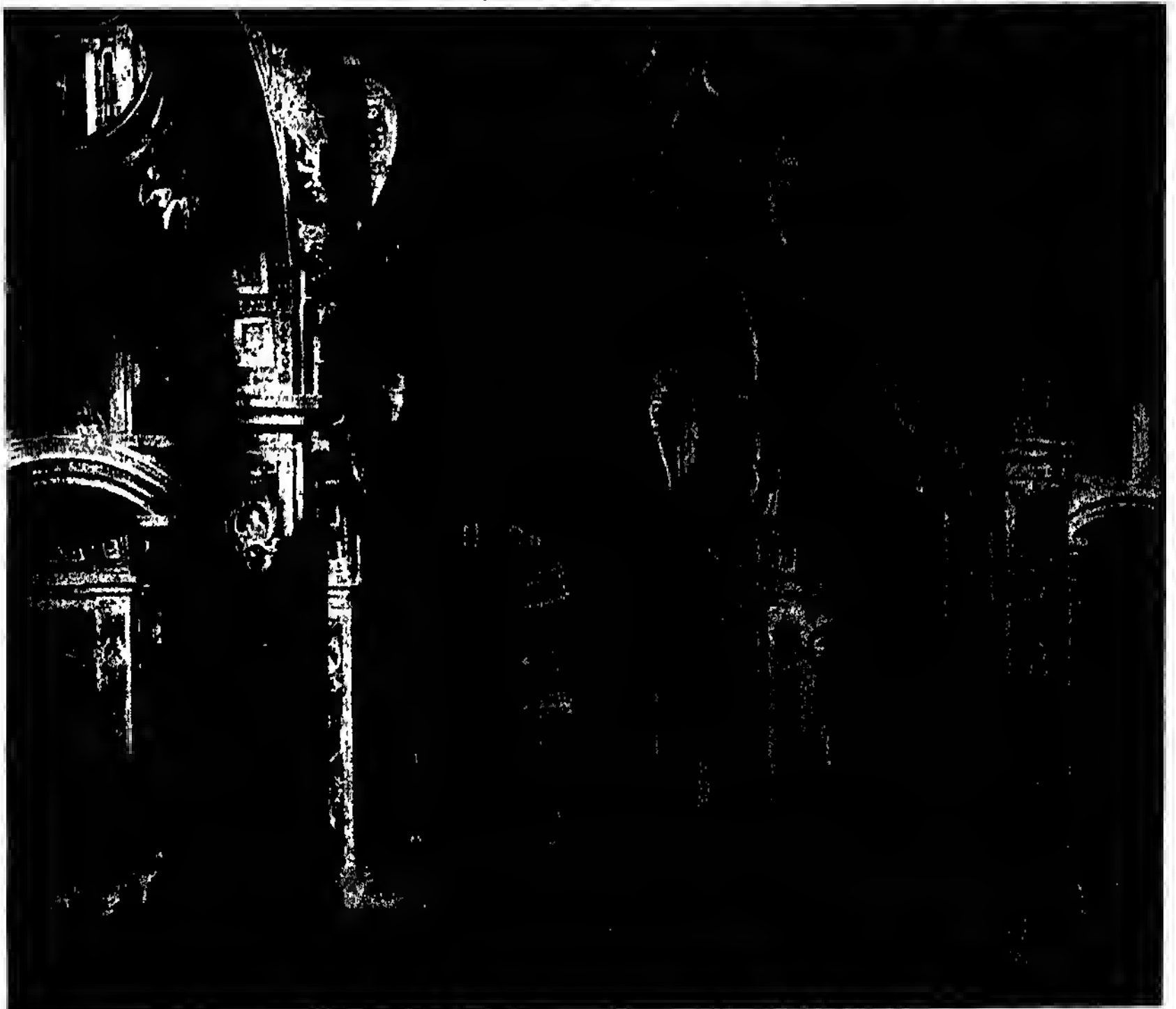
Four huge pillars hold up the dome, and around the church are a dozen other domes, over a dozen chapels, all larger than the average American church, and unspeakably more lovely. There is not a chair in St. Peter's, I think, only a wooden seat or two here and there, and the great marble floor is free.

And as you wander in this great place, which seems to grow more spacious and more lovely as you walk about it, you come to feel that it is one of the world's master-places. I cannot describe the effect of walking up and down the aisles, in and out of the chapels, across the transept and back again under the great dome. I have walked round and round St. Peter's with my eyes fixed on its vaulted roof, lost in wonder. As one dome passes out of sight and another comes into view, as the rich gold of the great arches strikes the eye, as the great mosaics and frescoes come—one of them represents nine men's work for ten years, ninety years of human labor—as the white marble tombs loom before you, while the great silence of the place grows upon you all the while, you are overwhelmed, in spite of Byron's saying, that

CHRISTIANITY'S HOME IN ROME, THEN AND NOW



The central home of Christianity in Caesar's time : a funeral service in the Catacombs.



The central home of Christianity in Rome to-day ; inside St. Peter's.

A GREAT DAY IN THE ROMAN FORUM DURING THE LIFETIME OF JESUS



If Jesus could have gone to Rome during his lifetime on earth, as Paul and Peter did afterwards, this is the kind of scene he might have witnessed in the Forum, painted here by Professor Prospero Piatti. While Jesus was talking quietly to the people in the villages of Palestine, laying the foundations of the Empire that was to cover the earth, the Emperors of Rome were living in glory and power, not dreaming that their empire was to pass away, conquered and transformed by the teaching of Jesus of Nazareth.

as you enter St. Peter's your mind grows colossal with the place, and therefore you are not overwhelmed.

THE TREASURE-HOUSE OF THE WORLD

Yet this marvelous place is only a part of a place; it is only one part of the Vatican, the greatest building in the world to-day. It is the wonder-house of the world, full of priceless treasures, yet it stands not alone in its glory, but here in Rome among a thousand wonders. It is the greatest palace and the greatest church on the face of the earth. It is said to have a thousand halls and chapels and apartments, and over one ceiling alone Michael Angelo gave up four hard-working years of his life. Whether this roof, or a roof that Raphael painted, is the greatest thing in art is an endless controversy among those who understand these things; but the Vatican will not be jealous whichever way the problem is decided, for both these roofs are here within its walls.

Here is a gallery of pictures which no money in the world could buy; here are miles of sculptures which almost speak aloud of the world that was for centuries before a Parliament sat at Westminster. Here is Augustus, the mail-clad ruler of the world, who found Rome brick and left it marble; he who ordered the census which took Mary to Bethlehem and made a manger sacred and immortal as the birthplace of an empire compared with which the empire of Rome was like a home of ants. Here he stands, this splendid Cæsar, seeming, as somebody has said, as if he were speaking those words which Virgil wrote of him: "Din of arms shall cease, and days of hardship shall be softened." Here, too, is Demosthenes, chiseled by a man who knew him, his face caught at the moment when he is trying to catch the ear of a frivolous crowd by warning them of a danger to Athens, and we seem to hear him crying, "Oh, Athenians, my countrymen, when I talk to you of political dangers you will not listen, and yet you crowd about me to hear a silly story about an ass."

Here is the famous Laocoon, that terrible group of a father and his sons in the coils of a snake; one of the very greatest sculptures in the world, which stood in the palace of Titus, the conqueror of Jerusalem, who came back to Rome and set up a beautiful arch,

on which is seen to-day a picture of the Temple swaying in its fall.

Through the heart of the town runs the famous Corso, the great avenue of Rome. At one end of it is the convent where Luther stayed on that visit to Rome which opened his eyes, and sent him out into the world to start the Reformation. Not far away sleeps the man who perhaps may have kept the Reformation out of Italy, Ignatius Loyola, who took a little band of men into a chapel in Paris and swore them to be faithful, and founded the Order of Jesuits. A little distance off sleeps Fra Angelico, whose pictures travelers love to see, and beneath the altar of that same church, with the lights that never go out shining in the dimness, is the figure of a woman in a tomb with a glass front and two lamps burning in it. She is Catherine of Siena, whose story is told in THE BOOK OF MEN AND WOMEN.

THE MYSTERY OF THE ETERNAL CITY

And so on for ever—for it is not possible even to mention here a thousand things that travelers come to Rome to see. You must come to see them. You will wonder at the narrow, unpaved streets made of lava-stone; at the confusion of men and horses mixed up everywhere. You will wonder at the sound of running water in the streets, especially at night, when the trickling of the fountains is weird and odd. You will wonder at the frescoes on the walls of the houses, sometimes illuminated at night by electric lamps; and if you are passing a great house in the dark you will be startled, perhaps, by the appearance of white figures seeming to step out into space from niches in the wall. You will start back at the sight of living wolves close to you on the Forum steps. It is part of the mystery of the Eternal City, the spirit of the Colosseum, the memory of the Forum, the something that creeps out of Caligula's palace at night and fills the air with the terror of the Past.

And, once you come to Rome, there will come into your life something that will never leave it until life ends, and you will want to come to Rome again and again and again, to feel yourself a far-off looker-on, through the veil of centuries, at the greatest pageant that Father Time has ever seen.

CONTINUED ON PAGE 6041.

THE MEETINGS A KING COULD NOT STOP



"THE MEETING-HOUSE." FROM THE PAINTING BY FRANK CRAIG



GEORGE FOX, THE FOUNDER OF THE QUAKERS, PREACHING IN A TAVERN
The Quakers were bitterly persecuted when they began to hold meetings, and Charles II. tried to stop them. But the meetings went on, and the sect spread over England, and later into parts of our country.

The Book of MEN & WOMEN



Swarthmore Hall, near Ulverstone, the home of Margaret Fell.

MARGARET FELL THE QUAKER

IT was a winter's day in the year 1652. Across the sands of Morecambe Bay the figure of a man on horseback could be seen, coming from the direction of Lancaster, England.

The rider was Judge Fell, returning from his duties as judge on the North Wales circuit, and making for his home at Swarthmore Hall, near Ulverstone. As he drew nearer, parties of gentlemen went out over the sands to meet him. They had news to tell him. In his absence a religious teacher of extraordinary power had been visiting his house, and holding meetings there; his wife and family were all "bewitched" by the stranger.

Somewhat alarmed, and greatly annoyed, the judge hastened to his home. Then he found out what had happened. The extraordinary visitor proved to be George Fox, the founder of the Quakers. Arriving at the Hall in the absence of the judge, he had been hospitably entertained by the judge's wife, Margaret Fell, one of the most delightful characters in history. He held meetings at the Hall, and the mistress herself, and many of her household, were "convinced of the truth," as preached by him. It was therefore with some trembling that she looked forward to

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her husband's return. "Any may think," she says, "what a condition I was like to be in, that either I might displease my husband or offend God." But she was of the stock of the martyrs, being descended from Anne Askew, who was burned at the stake in 1546. At all costs she would hold to her convictions.

The judge, however, was a broad-minded man, full of common-sense. As he talked with George Fox and his Quaker companions he became impressed with their reasonableness and honesty of purpose, and his irritation passed away. On the following morning the minister of Ulverstone came to warn him against these dreadful Quakers, who were "turning the country upside down," but the judge sent him away, and hearing that there was a difficulty in finding a place for holding meetings in the neighborhood, promptly said to George Fox: "You may meet here."

From that time forward Swarthmore became the centre of Quakerism in the North of England. It was a home for all the traveling preachers, to which they could repair in the short periods they were out of prison. Margaret Fell became "the mother of Quakerism." The judge himself never became a Quaker; but though

he remained a strong Churchman to the end, he extended his sympathies and help to the persecuted sect. What an interesting sight it must have been—the Quakers holding their assembly in one room, and the judge sitting quietly listening in the room across the hall with the door ajar! In one room mother and children were worshipping with the rest; in the other the father, and head of the household, was sitting alone.

Thus six years passed, husband and wife being rather united than divided by the new experience, until in 1658—one month after the death of Cromwell—Judge Fell died. By his death his wife lost not only “a tender husband” but a powerful protector. The Quakers, too, now that Charles II. had come to the throne, began to suffer terribly. George Fox was arrested at Swarthmore and flung into Lancaster Gaol. Then Margaret Fell went up to London to plead before the king for his release, and that of all imprisoned Quakers. Standing calm and unmoved amid the sneers of the Court, she pressed her suit upon the king, and after a time she was successful, but still fiercer persecution followed. At one time thousands of Quakers were held in prison, and during the dreadful plague of London many of them died in the overcrowded jails.

Margaret Fell herself was not to go unscathed. On her return to Swarthmore she was arrested, and charged with holding religious meetings in her house. Would she promise to give them up? No. Not if she were to be instantly set free on doing so? No. If she re-

fused, the punishment would be terrible—forfeiture of all her property, and imprisonment for life. No matter. “I must offer my life, my all, if it be required of me.” They gave her three months to think it over, but her purpose never wavered. And so she was sentenced to lose all her belongings, and to be im-

prisoned for life. As she left the court she said, in calm and resonant tones: “Although I am out of the king’s protection, I am not out of the protection of Almighty God.”

Although her property was declared a forfeit, it was not given to anyone else, and afterward the decree

against it was removed so that it became her own again.

For four and a half years she languished in Lancaster Castle, in a place—as she wrote to the king—“where storm, wind, and rain enter, and which is sometimes filled with smoke, so that it is much that I am alive, but that the power and

goodness of God hath been with me.”

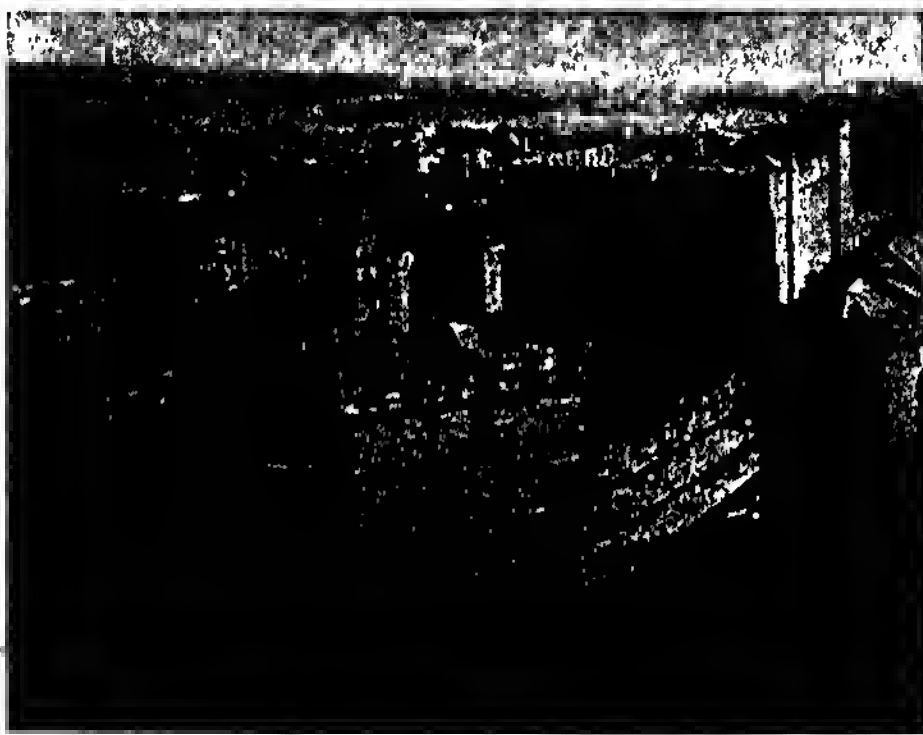
At the close of that period the efforts of her friends procured her release, and she immediately set out on a tour of inspection of the prisons of England. So bitterly had she suffered during her own imprisonment that she resolved to do all in her power

to improve the condition of other prisoners. She was a prison-reformer before Elizabeth Fry. As she traveled about she came to Bristol, and here, in 1669, occurred one of the great events of her life. She married George Fox! Let George Fox tell the story of this in his own quaint words:

“I had seen from the Lord, a con-



Where Margaret Fell used to worship.
The Friends' Meeting House at Ulverstone.



Lancaster Castle.

Where Margaret Fell was imprisoned for holding services.

MARGARET FELL THE QUAKER

siderable time before," he wrote, "that I should take Margaret Fell to be my wife, and when I first mentioned it to her she felt the answer of approval from God thereto. So after I had acquainted her children with it, our intention of marriage was laid before Friends, to their full satisfaction. Afterwards a meeting being appointed on purpose for the accomplishing thereof, in the public meeting-house at Broadmead, in Bristol, we took each other in marriage, the Lord joining us together." The bride was now fifty-five years of age. After only a week's "honeymoon" they parted, she going back to her work in the north, he to his travels and still further imprisonments.

Margaret Fell's daughters welcomed George Fox as a new father, but her only son, who had not become a Quaker, disliked the marriage. He was very disagreeable about it, and tried to compel her to give up Swarthmore.

For six years Margaret Fox and her husband saw little of each other. She was made to suffer a second imprisonment in Lancaster Castle which lasted over a year, and during that time her husband had a severe illness. After her release she joined him near London, and stayed with him until his departure on a missionary tour. He was absent for some time in Barbadoes, the West Indies, and on this Continent, and was imprisoned at Worcester soon after his return. But in 1675 he was released, and came to Swarthmore, where he stayed for two years. These were happy, peaceful years.

George Fox was soon off to Holland and the Continent. Persecution broke out again—for the last time—and the patient mistress of Swarthmore was once more a sufferer. She was fined for speaking at a meeting in her own house, and when she refused to pay they took thirty head of cattle from her. "Tell them to be kind to the poor beasts, Edward," was all she said to her bailiff. And then, turning to those about her,

she added: "We must take cheerfully the spoiling of our goods, for we have in heaven a better and an enduring substance."

Not long after, in 1691, George Fox died, worn out with hardship and imprisonment. She was not with him at the end. He died in London, while she was at Swarthmore. He had lived to see his work established, and the day of persecution past. In his letter to Margaret Fox, telling her of her husband's death, William Penn spoke of his friend as "a prince indeed," and another friend said that he lay as if he had only fallen asleep. As for her who had shared so much of his lot, through good days and through bad, she survived him by twelve years. She died on April 23, 1702, in the eighty-eighth year of her age. Her last words were, "I am in peace."



The College of the Society of Friends.

They laid her to rest among her native hills, in a small green enclosure, not far from Morecambe Bay, that belongs to the meeting-house which George Fox presented to the congregation of Friends at Swarthmore. No headstone or monument marks

her grave. She needs none. She lives enshrined in the hearts of thousands to-day, men and women to whom the world is a fairer and brighter place because she has lived. Her name is held in high honor in the Quaker community. When the Friends built a college in this country, they decided to name it in her honor, and many students have learned to love and revere her memory at Swarthmore College in the Pennsylvania hills.

No portrait of Margaret Fell exists, but we are told that though she was not beautiful, she had a pleasant face, which showed the sweetness of her thoughts. She had a strong, kindly nature, full of the charity that thinks no ill, and in spite of many duties, she could always find time to take trouble for others. This clever woman was well educated for her day. She wrote many books, but they were meant to aid in the spread of Quakerism, and are now interesting only to members of that faith, and to students.

MRS. HEMANS, THE CHILDREN'S POET

YOUNG people may rightly claim Mrs. Hemans as their very own poet. She is not one of the greatest poets, but she is sure of immortality; her poems will be spoken and sung, we all believe, as long as the English language endures—and why? Because the children of all ages love her and her poetry.

In her day, she was one of the most popular poets in the world, but her popularity waned, as it was bound to wane, because her work was not strong and bold and vigorous enough to hold the admiration of men permanently.

Scott explained the reason; to him it seemed, he said, that her poetry, much as he admired it, contained too many flowers and not enough fruit. It was pretty, musical, correct, abounding in tenderness and high religious thought, but it lacked depth and strength. Men tired of it as they tire of a sweet little song, as children tire of sweets and confectionery.

But the children have not tired of Mrs. Hemans. To them she remains a perfect heroine, and a sweet, beloved singer. The children's books contain many of her poems, as they always should, and it is because the children love her and her poems that her immortality is assured. It is right that children should love her and her work, for she dearly loved children. Had she not so loved children she might have been a greater poet. She poured out her poems that she might have money with which to feed and clothe and educate her five little boys, and her work killed her. Had she written less, she would have been able to write better. Still, as it is, she has left us songs and poems which children love and keep alive.

Felicia Dorothea Hemans was born at Liverpool on September 25, 1793. Her father, George Browne, was at one time a prosperous merchant, but misfortune overtook him, and he had to give up business and go to live at Gwrych, in North Wales. There Felicia grew up with her six brothers and sisters in surround-

ings of natural beauty, which inspired her with the poetic passion. She early began to write verse, and her parents were so unwise as to publish a little volume of the poems which she had written before she was fourteen. The work was badly



THE WELSH HOME OF MRS. HEMANS, NEAR ST. ASAPH

treated by the critics, but Shelley, the great poet, saw the poems, and, hearing that their young author was a girl of great beauty—as indeed she was—he desired her to correspond with him. This Felicia's parents would not

permit, and the girl gave her thoughts to better poetry, and published the same year, 1808, poems of far higher level.

She read a great deal, and the wars of the period, in which two of her brothers were gallantly fighting, filled her young soul with patriotic ardor. Hence, when a dashing young Irish captain, named Hemans, came along to quiet little Gwrych, Felicia fell in love with him. He went off to the wars with her brothers, and to her he seemed a hero. In 1812 Captain Hemans returned and married the beautiful young poet, who was then only nineteen years of age. They had five little sons, and then, in 1818, the captain went off to Italy, leaving his girl-bride with five baby boys to maintain. She never saw her husband again. He lived in Italy for a time at least, and about ten years afterward the two elder boys went to live with him in Rome. Up to that time she was left with five small boys to maintain, and all their support had to come from her busy pen.

The brave young mother did not flinch from her task. She set herself to support her little family on the money that she earned by her poetry. She won a £50 prize for the best poem on the meeting of Bruce and Wallace, and three years later she gained a prize for the best poem on the subject of Dartmoor. She worked very hard, writing books and poems and articles for papers and magazines. Her fame became widespread throughout Great Britain and in America. Her fame

in America was helped by her poem on the landing in America of the courageous men who were the first to leave England to worship God after their own consciences. The fine impressive poem begins :

The breaking waves dashed high
On a stern and rock-bound coast.

Multitudes of people used to assemble to sing the stirring words on the very spot at which the Pilgrim Fathers left their ship and first set foot on American soil. But Mrs. Hemans never saw the spot, and did not know what the scenery was like. One day an American admirer of the poem called to see her in her home near Windermere, and told her how highly the poem was regarded in this country. She asked him to describe the exact scene of the landing. He had to confess that the coast is not "stern and rock-bound," but flat and free from danger. She was so grieved to think that she had given a wrong description of the scene that she burst into tears of shame, and could not be comforted.

We have traced her to Lake Windermere. It was to a pretty little cottage overlooking the lake that she retired after leaving Liverpool, whither she had gone from Wales. She went there for peace and quiet, and to work amid the beauties of the neighborhood to which Wordsworth had introduced her. But peace and quiet were not for her. Crowds of vulgar tourists found her out, and haunted her house, and, by begging for her autograph and other keepsakes, made her life a misery. It was here that she found that the strain of maintaining her family was breaking her health. She was too proud to tell her friends how hard and how killing the struggle was, and she worked on until her constitution was ruined. She knew that she was killing herself by overwork; she knew also that she would never be able to give herself time and peace of mind to write the great poem upon which she desired that her fame in after years might rest. She went with her children to Dublin, to be near a beloved brother and his wife, but still the struggle for the children's welfare had to continue.



MRS. HEMANS

She had many sorrows. Her husband had disappeared, her parents were dead, and death claimed several of her brothers and sisters, as she tells us in that mournful poem, "The Graves of a Household." But she toiled on, cheerfully, ungrudgingly, writing, in order to live, poems upon a variety of subjects, which the children of the world have since refused to let die. What child has not felt his heart beat and his eyes moisten as he has recited "The Child's First Grief"?

O call my brother back to me,
I cannot play alone!
The summer comes with flower and bee—
Where is my brother gone?

A still more famous poem of hers is "Casabianca," known and recited throughout the English-speaking world.

She loved her home dearly, the home which she strove so bravely to keep for her little ones, and we can tell that it is from her heart that there came the famous poem, "The Stately Homes of England." Another of her compositions which every child knows is, "He Never Smiled Again." It is safe to say that twenty or thirty of Felicia Hemans' poems will be found scattered through the most popular books

of recitations of to-day. That is a great thing to be able to state of the work of a woman like Mrs. Hemans. She was only forty-one when she died. She caught cold while sitting in a Dublin garden, and she was so weak from her heavy work that she wasted away and died—May 16, 1835—in the very prime of life, while she was still capable of finer work than anything she had done.

Felicia Hemans was buried in a pretty Dublin church, and her friends chose for her epitaph some beautiful lines which she herself had written. They are these:

Calm on the bosom of thy God,
Fair spirit! rest thee now!
Even while with us thy footsteps trod,
His seal was on thy brow.
Dust to its narrow house beneath!
Soul to its place on high!
They that have seen thy look in death,
No more may fear to die.

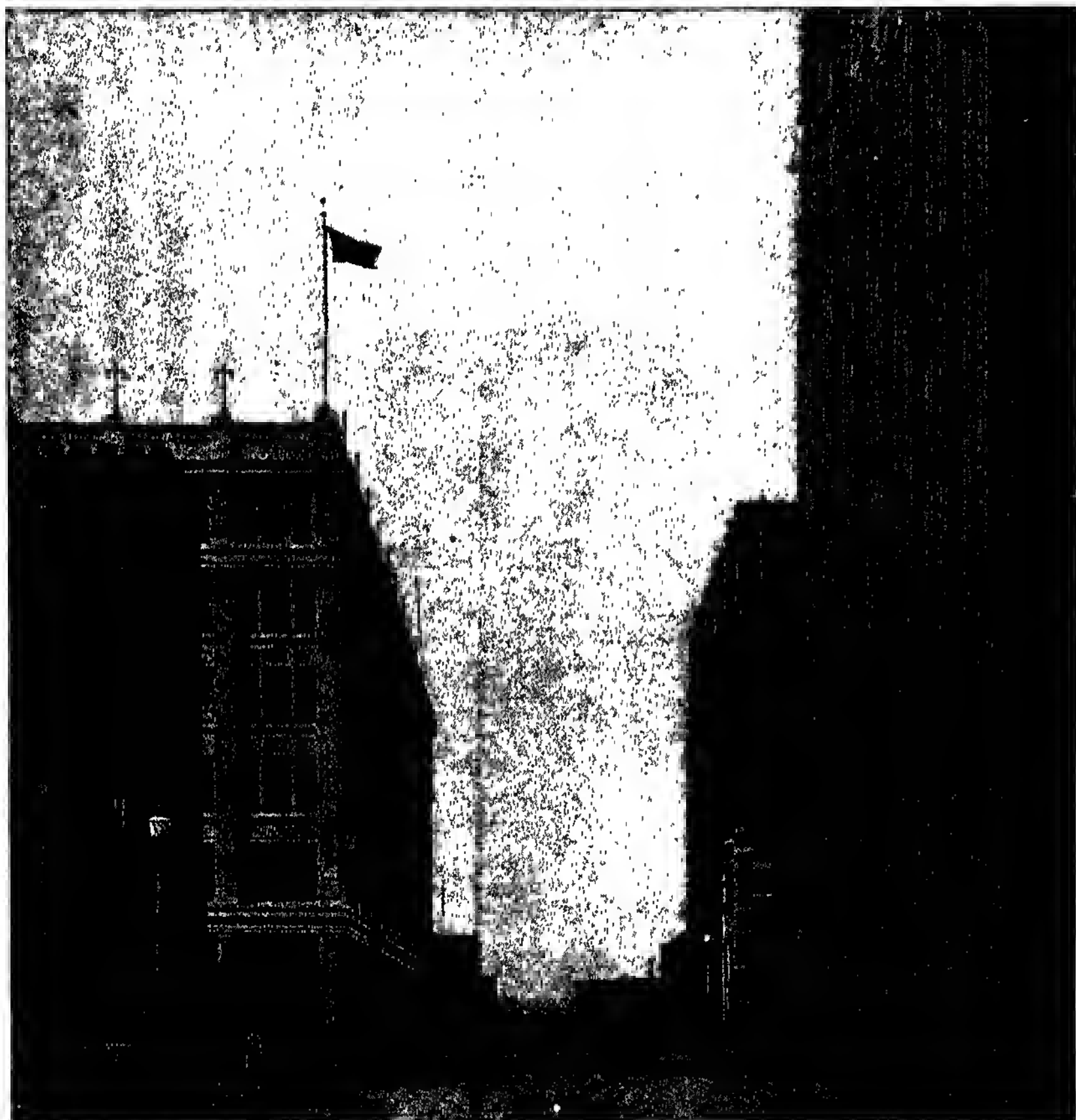
Seldom has a poet's epitaph been more fittingly written by that poet's own hand.

THE NEXT STORY OF MEN AND WOMEN IS ON PAGE 6029.

PROGRESS IN A NEW COUNTRY



The Provincial Parliament Building at Edmonton.



These pictures give us a good idea of the growth of the Canadian Northwest provinces. In 1882, when the Territory of Alberta was set aside, the site of Calgary was prairie. It now has a population of over 80,000, and the business streets are lined with handsome buildings, such as you see in the lower picture. The Territory was made a province in 1905. The Provincial Parliament Building at Edmonton, the capital of the province, is built on the site of the old Hudson Bay Trading Post, which was established in 1789.

WHAT THIS STORY TELLS US

PERHAPS we do not know that Canada is every year drawing immigrants from almost every country in the world. They come from Europe, from Asia, and from the United States. Every year many prosperous American citizens sell all their goods and move to Canada, where they can get good land almost for the asking. A majority of the immigrants go to the new West, which is developing so rapidly. Though its growing population is still scattered and it can support a much larger number. You will also learn below of the coming of the Chinese, Japanese, Hindus, and the queer people known as the Doukhobors.

THE CANADIAN IMMIGRANT

FOR a century Canada had endeavored to attract settlers to develop the wonderful resources of the country. Notwithstanding these efforts many of the immigrants simply stopped on their way to the United States. Not only was Canada not holding the immigrants, it was also losing its native born population. In 1896, a new policy was adopted and an active campaign was started for attracting attention to the Dominion in general and to the Northwest in particular.

THE ADVERTISING CAMPAIGN BY THE CANADIAN GOVERNMENT

The Canadian government began to advertise in Europe and in the United States. Every means possible was adopted to draw attention to the opportunity for settlement in Canada. Immigration agencies were established in the British Isles, in many countries of Europe and in the United States. The greatest activity was shown in Great Britain, where thousands of dollars were spent. Literature setting forth the great resources of Canada was mailed to all agricultural laborers in the United Kingdom. Well-mounted maps of Canada were presented to every school in the British Isles. Medals were offered in five hundred schools for best essays on Canada, and an Atlas of Canada was presented to the children. Lectures illustrated with Canadian views were given throughout the agricultural districts. Specially constructed busses

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filled with collections of Canadian products in charge of capable men made tours throughout the country. Advertisements were inserted in the papers read by the farming classes. In the United States, agencies were established in many of the leading cities. Thousands of pamphlets dealing with the resources of Canada were mailed to desirable immigrants. Advertisements were inserted in thousands of American newspapers. Liberal bonuses were given for obtaining immigrants. No country in the world's history ever carried on a more energetic and a more systematic campaign for obtaining desirable settlers. These efforts are still being made.

WHAT IS MEANT BY "HOMESTEAD LANDS"

The government has pursued a very generous policy in the granting of public lands. Any person who is the sole head of a family, or any male over eighteen years of age may homestead a quarter section of one hundred and sixty acres of available Dominion land in Manitoba, Saskatchewan or Alberta. By the payment of a fee of ten dollars at the time application for homestead entry is made and with six months residence and cultivation of the land in each of three succeeding years, a deed may be obtained from the Dominion government.

THE UNDESIRABLE IMMIGRANT

The aim of Canada has been to introduce farmers, agricultural laborers

and others who would not compete with those engaged in the skilled trades. A large number of the immigrants from Great Britain had come from the cities. Many of these were not fitted to engage in farm labor; in addition many preferred to settle in the cities. The attraction of this class was due to Canada's vigorous advertising campaign, to the activity of societies, and to the eagerness of steamship agents to get traffic. The Canadian officials made complaints of this practice which for some time prevailed in England. For example, the Metropolitan Aid Society aided many criminals to go to Canada, with a view to giving them the chance of a fresh start.

Many philanthropic societies have assisted in landing thousands of penniless immigrants on Canadian shores. The British Welcome League of Toronto between March and November, 1907, assisted 5,200 immigrants, of whom seventy-eight per cent. were either penniless or on the borderland. The coming of city-dwellers brought up questions concerning the quality of immigration. As a result of several investigations a revision was made in the laws and they are enforced with greater rigidity. The aim is to debar all those not suited to Canadian conditions.

THE IMMIGRATION LAW KEEPS OUT MANY

The law says that those who are feeble-minded or insane shall not land. Nor does it allow the deaf, dumb, blind or cripples to come in unless they belong to families which are able to take care of them. Those who have certain diseases are also shut out, and a strong effort is also made to keep out all whose moral character is not good. Any one who commits a crime within two years after coming to Canada may be sent out of the country. Some of these points seem very hard, but Canada feels that she must protect herself.

Each immigrant, male or female, must have twenty-five dollars besides a ticket or else money enough to buy a ticket to the place he intends to go. The head of the family must have twenty-five dollars over and above money enough to buy a ticket for each member of the family to the place where they are going, and also twelve dollars and fifty cents for each child over five and under eighteen years. Between the first of Novem-

ber and the first of March these sums are doubled. This rule is not strictly enforced if the immigrant is alone, is strong and healthy and has the promise of a position, or when he or she is going to join a relative already settled in Canada. Railway "navvies," farm laborers, and domestic servants need not have any money. The immigrants to Canada have been of many different nationalities and colors. Europeans from almost every country, Asiatics and Americans have all poured into the new country, and there has been some race-feeling.

THE CHINESE IMMIGRANTS ARE HEAVILY TAXED

The Chinese began to come to British Columbia about 1858, but it was not until the late seventies that any organized opposition to their entry was made. Several laws against them were passed by the government of British Columbia, but they were declared unconstitutional. Finally the matter was taken up by the Dominion government and, in 1885, an entrance tax of fifty dollars was imposed. This did not end the complaints, and petitions were yearly sent to the Federal government urging further restriction. In 1900 the tax was increased to one hundred dollars and three years later to five hundred. One half of the tax is paid to British Columbia.

THE JAPANESE COME TO CANADA

The coming of the Japanese dates from about 1896. While the Chinese do not compete, to any extent, with skilled white labor, there is some competition in the case of the Japanese. The Japanese are quick to learn English and show more readiness than the Chinese to become naturalized. At the time of taking the last census, there were nine thousand Japanese in British Columbia, of whom more than one-third were naturalized British subjects. In opening up the Pacific coast the sturdy little brown men have worked on the fishing grounds, in the sawmills, in the logging camps and on the farms. Nearly one half of the fishermen belong to this race. Under the treaty of 1905 between Canada and Japan, the subjects of either country were granted full rights of entry into the territories of the other. At the same time, there was an understanding that Japan would regulate the number of Japanese laborers coming into Canada.

THE WONDERFUL CANADIAN WEST AND THE GROWTH OF A CITY



The scenery in the mountains of Western Canada compares in beauty and grandeur with that in Switzerland and some people think it has greater beauty than the Swiss mountains have. This is Upper Bow Valley, from Tunnel Mountain at Banff in Alberta. There are thousands of views among the Canadian Rockies equally beautiful and impressive, as you will see on pages elsewhere in the book.

Pictures copyright, 1906, by H. C. White Co.



On another page we show another view of Winnipeg, the magic city of Manitoba. Winnipeg is a distributing centre of immigrants, and the chief market place for a wide region, now rapidly filling with farmers, many of whom are from the Western part of the United States. Some of the inhabitants of this large city have seen its growth from a small village. As late as 1870 it was a Hudson's Bay Company post.

The Japanese government has kept its word, and very few now come to Canada.

THE HINDUS ARE NOT WELCOMED IN CANADA

The Hindus began coming to British Columbia about 1904. With the coming of twenty-two hundred in 1907 some ill-feeling arose. The sudden increase was due to the distribution through certain rural districts of India of glowing accounts of the wages paid in British Columbia, and to certain steamship agents who wished to make profit on tickets sold. The matter was taken up with the British government. No contract laborers from India are now allowed to enter Canada. All immigrants must have made a continuous journey from the country of origin. All Asiatic immigrants, with the exception of the Japanese, must possess on landing at least two hundred dollars.

THE DOUKHOBORS, A RUSSIAN SECT IN CANADA

A number of ignorant Russian peasants came to Western Canada during the winter and spring of 1899, in order that they might be allowed to follow their own religious beliefs. Three years later they attracted world-wide attention by a famous pilgrimage that they attempted to make. They came under the influence of fanatics who preached that they should give up labor and all their goods and go forth like Christ and preach the Gospel. They handed over their money to the nearest government agent, cattle and horses were allowed to go free, but were rounded up and taken in charge by the mounted police. They cut the metal hooks and eyes from their clothes, set everything in order in their homes, and started on a pilgrimage which soon reached proportions that alarmed the authorities. The government took stern measures and the motley crowd was brought back to their homes. At this time, Peter Verigin, their leader, who had completed a term of exile in Siberia, reached Canada. Under his skilful leadership, order was soon restored and since that time the people have remained quietly on the land.

Everything is held in common. They live in villages of one to two hundred people, and there are nearly fifty of these. In the villages, each cottage is surrounded by a garden. A large communal barn is for the farming implements,

while one or two large stables furnish shelter for the horses, cattle, sheep and pigs. All work in the fields. The working day is from five o'clock in the morning until eight in the evening. The time is divided into three shifts of five hours each. One set of men and horses go to work at five and stop at ten for five hours' rest. A new shift works from ten till three, when the first resumes work.

The leader is the active manager of the Doukhobors. He is the custodian of the fund, to which each man, woman and child contributes his or her earnings. He sells the products and buys at wholesale the goods needed. Two men and one woman delegate are sent from each village to the general meeting. This meeting is opened with the Lord's Prayer and closed with the singing of Psalms. This meeting looks carefully after money matters and discusses any business which may come up.

During the summer of 1899, for the want of horses, women took their place and drew the ploughs. Religious societies assisted them through the winter and the government furnished the seed for the first crop. See what they did in a little more than ten years. In 1911, when the last census was taken, they had horses, cattle and sheep in great numbers. They owned steam-ploughs, twenty-five steam-threshing outfits, grist-mills, sawmills, blacksmith and carpenter shops and grain elevators. In that year they raised over a million and a half bushels of wheat, oats, barley and flax.

THE AMERICAN IMMIGRANT IN CANADA

The American in Canada can scarcely be called an immigrant; he is rather a solid citizen. He considers that Western Canada offers him better opportunities than his own state, so he comes with all of his possessions. Canadians and Americans alike pass from one citizenship to another with far less friction than an Englishman can be transplanted to Canadian or American soil. Since the first movement toward Canada began, about 1898, it has gone forward with a rush. During the year ending March, 1912, nearly forty per cent. of the entire immigration into Canada came from the United States. Every state in the Union was represented in the rush to the fertile wheat lands of the North. The average amount

THE HAPPY LIFE OF THE ROLLING PRAIRIE



A FAMILY ARRIVING ON THE PRAIRIE TO SET UP A HOMESTEAD



NEW SETTLERS AT WORK, TRANSFORMING WILDERNESS INTO A FRUITFUL GARDEN



A FARM ON THE PRAIRIE AFTER SETTLERS HAVE WORKED UPON IT FOR TWO YEARS

The rolling prairie of Western Canada has vast hoards of wealth hidden in its fertile soil, and as the land becomes more and more cultivated this wealth will be realized in huge crops of wheat and fruit. These pictures are published by the courtesy of Canada, a weekly newspaper published in London

of wealth for every man, woman and child was over eleven hundred dollars. From 1901 to 1912, 734,000 Americans, bringing with them over half a billion dollars in gold and effects, have sought homes in Canada. After that year immigration from the United States fell off a little, but it is still large, and by the end of March, 1916, over a million Americans had come to live in Canada. The farmers in Western United States sell their land for a high price, and move across the line, where they can get land as good very cheap, if indeed they have to pay for it at all. The Canadians welcome the Americans, who soon adapt themselves to their new surroundings and become good Canadian citizens. These families are, however, a great loss to the United States.

An interesting point in Canadian immigration is the number of child immigrants. Friendless children are carefully trained in orphanages in England, and are brought over at the age, generally, of from five to fourteen. Older children, especially boys, are also brought over, though in fewer numbers. Usually the younger children are adopted into Canadian homes, and the children over fourteen are generally sent to work for farmers. The orphanages have headquarters, called "Homes," in Canada, where the children live until they become used to the country. The wages for which they work are fixed for them by the Homes, and visitors regularly inquire after the welfare of all the children.

WHERE THE IMMIGRANTS COME FROM

For the year ending March, 1912, three out of every four immigrants spoke the English language, and came from the British Isles or the United States. No efforts are made to get immigrants from the south of Europe, who are attracted more to the United States.

Nevertheless, in the immigration to Canada fifty-four nationalities are represented. The Chinese are found in every province, while few Japanese come east of Winnipeg. The Hindus are rarely seen beyond British Columbia and Alberta. Greeks, Italians and Russian Jews flock to the large towns and cities. Thousands of Galicians are unskilled laborers in the western provinces. Mormons, Swiss, French, Icelanders, Swedes, Doukhobors, Germans, Norwegians, Danes, Finns and the English races, in-

cluding the American, form the farming classes of the western prairies.

Before the close of the year ending in March, 1914, immigrants from Russia, the parts of Austria inhabited by Slavs, and Italy increased in numbers. The Italians were attracted by work offered them on the railways, but many of them went back to Italy for the winter months.

WINNIPEG, THE MELTING POT

With the one exception of Johannesburg, Winnipeg is said to hear more languages spoken on its streets than any other city in the world. The city is the great distributing centre for immigrants. Near the Canadian Pacific Railroad station is the Immigration Reception Hall, big enough to provide temporary sleeping room and housekeeping facilities for one thousand people. The Bible may be purchased in sixty distinct tongues, and more than thirty languages are spoken on the streets of the city. With excellent day and evening schools, Winnipeg is performing a valuable service in making Canadian citizens out of these strangers.

THE IMMIGRATION POLICY

Canada has great areas of unoccupied rich fertile plains, and one of the chief aims of her immigration policy is to get suitable settlers for these lands, and to get farm and railroad laborers, and the always needed domestic servants. On the other hand the coming of those who will not make desirable citizens is discouraged, and if necessary those who are undesirable are sent home again. Only those races that will adapt themselves to Canadian conditions are encouraged to come to Canada. Unlike the United States, Canada has no contract labor law. On the contrary the evidences of assured employment upon landing count heavily in favor of admission and sometimes will serve as the only basis.

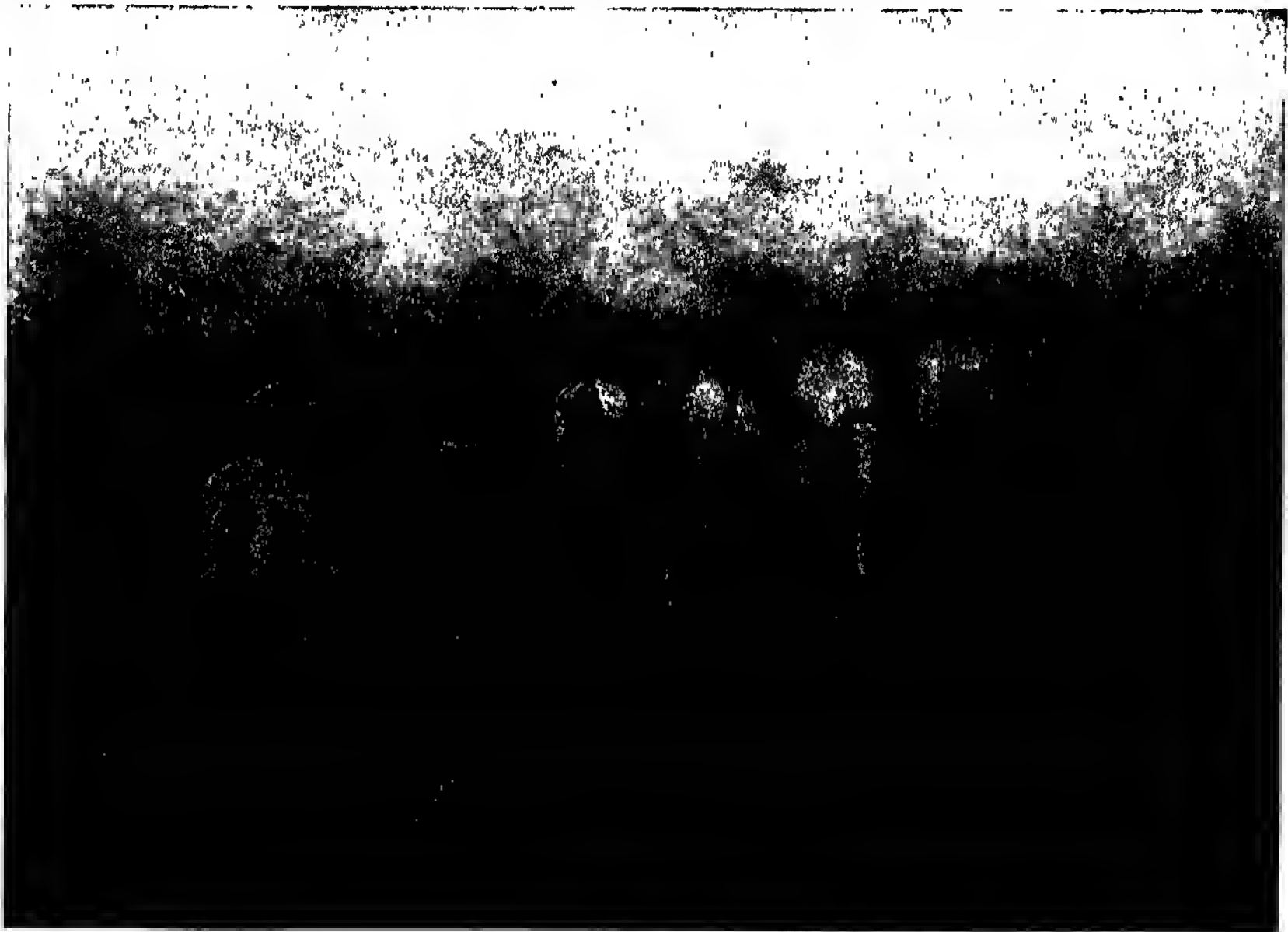
The Canadian law is very flexible. The power conferred on the Governor-General-in-Council is so great that it would be possible through special orders to cut off not only any particular class of immigration but to stop immigration altogether. No country in the world has exercised greater care in the selection of her immigrants and no country has met with greater success in the work.

THE NEXT STORY OF CANADA IS ON PAGE 6091.

HOW THE TOUGH SOD IS BROKEN



Much of the prairie land in Western Canada has never been ploughed. The roots of the grass and weeds are so matted together that a plough drawn by one or even two horses would be of little service. Here we see six ploughs drawn by an engine. They easily tear apart the stubborn sod, and bury the grass and weeds. This freshly cultivated land bears very large crops of grain.



This is a disc plough. The two discs shown in the picture are strong metal plates fastened at an angle. As they revolve they exert immense force and serve the same purpose as the plough shown above, though of course they do not do so much work. Notice the number of horses that are needed to draw the plough.

AN EXCITING MOOSE HUNT



These pictures of an exciting and unusual moose hunt were taken in Quetico National Park, in Western Ontario. Two men who were on the lake, in a canoe, sighted a moose which was swimming across the lake.



They gave chase, and as they came up with their quarry, one of the hunters sprang overboard. This in itself was a daring thing to do, because, as you know, a canoe is a very easy boat to upset.



As you see, however, the feat was so skillfully done, that the man landed on the back of the moose, and rode the astonished animal triumphantly to land, through the cold water of the lake. The "velvet" on the horns of the moose shows that the pictures were taken in spring, before the horns had become hard.

The Book of GOLDEN DEEDS



THE SANITARIUM AT SARANAC LAKE

THE BELOVED PHYSICIAN

IT was cold but very beautiful and quiet in the deep woods that afternoon. The mountains covered with unbroken forest rose steeply from the river, and at their base the valley swept out of sight in gracious waves. A hunter, clad in well-worn corduroys, thick leather boots and a fur cap, had fallen asleep leaning on his gun as he waited for a fox. As he slept he dreamed. Instead of the fox runway where he stood, he saw the forest melt away, and the whole mountain-side became covered with curiously built houses. As he gazed intently upon them the man saw that they were built inside out, as if the inhabitants lived on the outside.

To-day, if you stood on the spot where the hunter waited through the cold mid-winter afternoon, you would see that his dream has come true. Dotted over the mountain-side are over thirty small buildings, all of them hemmed with porches greater than themselves. Sidewalks and roads run from point to point in the little colony. In the summer, instead of tracks of unbroken forest, green lawns and flower-beds meet the eye.

Who is it that in so little time has worked this great transformation? None other than the hunter, himself, Dr. Edward Livingstone Trudeau,

Continued from 5709



called by his friends, "the beloved physician." When he fell asleep over his gun that cold winter day he was not merely a weary sportsman, waiting for a wily fox—he was also a very sick man, who had come to the Adirondacks merely to spend his last days amid surroundings which he loved. He had nursed a brother who had died from tuberculosis, and because so little was known in those days about the disease, Dr. Trudeau had exposed himself to unnecessary risks and so contracted the illness. He was only twenty-five years old, at the beginning of a promising medical career, and happily married, when the blow fell. After some months' stay on Saranac Lake at the headquarters of the famous guide, Paul Smith, Dr. Trudeau gained so much benefit from the beautiful air and restful woods, that he returned a second time. This treatment of open air and rest is one that is usually followed now, but in those days it was a new thing. If the patients were ill enough, they were kept in bed, and all fresh air carefully excluded, or if they were well enough to be about, violent exercise such as horseback riding was often prescribed. The second summer, Dr. Trudeau, against advice, decided to remain on through the severe winter, although

Paul Smith's was then sixty miles from a doctor or a railroad, and entirely cut off from all connection with the outside world.

The Adirondacks were a real hunter's paradise and every day the doctor followed his favorite sport, which was quite possible without going far from the house. His wife and two children joined him, and the doctor so improved that he began to practise among the Adirondack natives. After four years he moved to Saranac Lake, then a small lumber centre with only a few houses and a sawmill.

A few patients placed themselves under his care, and gradually the number increased. The visitors to the lakes were generally wealthy people, but Dr. Trudeau gave the guides and their families free medical attention, and they were all devoted to him. When the doctor made up his mind to build a sanitarium at Saranac Lake for people of moderate means, the guides found out the piece of land he wanted and by subscription raised the money and gave Dr. Trudeau the deed. Plans for building were at once considered and the doctor, putting his pride in his pocket, began asking his friends, acquaintances, and patients for subscriptions towards the expenses. For thirty years he bravely continued to beg money for others, and on many occasions had great pleasure in the generosity of his friends.

This was not done easily and without setbacks. On the contrary, the thirty years were full, for Dr. Trudeau, of uphill and heroic effort, often in the midst of bad health, difficulties, trials and sorrows. Year by year he faced the problem of paying a debt on his sanitarium, because patients were charged a fee that did not cover expenses. Each and every day was lived among people who were often in the saddest condition. Three of his four children died, but he continued bravely in his work. His house and little laboratory were burned down—all his instruments and precious records lost—but he gradually rebuilt.

Besides looking after his patients in the sanitarium, and those who came from the country round, or journeyed from far to see him—for his fame grew fast—Dr. Trudeau was occupied constantly with experiments that would help in the fight against the disease. It was very hard to get instruments and apparatus,

even in the cities, in those days, and we can imagine what it was in the very heart of the woods. His first laboratory was a little room at Saranac Lake, heated by a wood stove (there was no coal). He had a home-made apparatus, heated by a kerosene lamp, and in this he succeeded in growing the tubercle bacillus, which had been discovered by Koch to be the germ producing the disease.

Dr. Trudeau had many curious experiences among his patients. On one occasion at the end of a long day's work he saw a wretched-looking man waiting outside. The doctor was worn out, and it was in no very pleasant tone that he told the patient to enter, yet when he saw how thin and ill the last visitor was, his heart softened. The tramp sat down, put his hands in his pockets and stared at the doctor.

"How did you come here, and what is wrong?" asked the doctor, and his visitor, nothing loth, told a frank tale. He had been sent to a large public hospital, and not liking what he saw, determined to get out. In the ward he heard the doctors and patients speak of Saranac Lake and Dr. Trudeau, and made up his mind to strike out for the sanitarium. He was without a cent, but begged enough to get some little way on his journey. Soon, however, he was observed and put in the poorhouse. He told the authorities his story and his aim, and they bought him a ticket to Saranac. "In that way I finally got here. Now what can you do for me, Doctor?" The doctor collected enough money from some of his patients for the tramp to build a little rough board shanty on a vacant lot. There he slept on a straw bed, and the hotel proprietor gave him scraps from the table so that he lived very contentedly. He stayed for eighteen months and the doctor grew very fond of him.

So the work prospered and spread, and the fame of the delicate doctor grew. Other states, other cities and other individuals followed the plan of Saranac Lake Sanitarium, which was the first of its kind in America to practise the simple principles of fresh air, suitable food and rest. When Dr. Trudeau died in 1915, he had the satisfaction of knowing that his work marked the raising of the standard in the great fight against the white plague.

THE NEXT GOLDEN DEEDS ARE ON PAGE 6143.

